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FIFTY-SECOND ANNUAL REPORT

OF THE

Ohio State Board of Agriculture

WITH AN ABSTRACT OF THE
PROCEEDINGS OF

The County Agricultural Societies

FOR THE YEAR 1897,

TO THE

General Assembly of the State of Ohio.

NORWALK, OHIO.
The Laning Printing Company.
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Annual Report

OF THE

Ohio State Board of Agriculture

For the Year 1897.

Department of Agriculture,
Columbus, March 15, 1898.

To the Honorable, The General Assembly of Ohio.

Gentlemen: In compliance with law, the Ohio State Board of Agriculture herewith submits its fifty-second annual report. The report contains the transactions of the Board for 1897, Crop and Live Stock Statistics, bulletin of Entries and Awards of the forty-seventh Annual Fair, reports of County Agricultural Societies, proceedings of the fifty-third Annual State Agricultural Convention, report on Commercial Fertilizers, report of Farmers' Institutes, proceedings of the State Farmers' Institute, report of the thirty-sixth annual session of the Ohio Wool Growers' Association, proceedings of the fifth annual meeting of the Ohio Dairy Association and the proceedings of the thirty-first annual meeting of the Ohio State Horticultural Society.

The work of the Department of Agriculture is growing year by year and its helpful benefits are fully and freely recognized and appreciated by the agriculturists, horticulturists, stock growers and specialists in the many branches of rural industry in the state.

The General Assembly has been wisely generous in its treatment of the State Board of Agriculture, which is suitably and appropriately appreciated by each and every officer and member of the Board and its myriad constituents, co-workers and friends throughout the commonwealth.

Respectfully submitted,

Wells W. Miller.
Secretary.

Jas. W. Fleming,
Assistant Secretary.

41730

Officers and Members

OF THE

Ohio State Board of Agriculture

FOR 1897-98.

OFFICERS AND MEMBERS FOR 1897.

J. T. ROBINSON, *President*	Rockaway, Seneca Co.
C. BORDWELL, *Vice-President*	Batavia, Clermont Co.
J. C. BOWER, *Treasurer*	Columbus, Franklin Co.
A. J. CLARK	Cambridge, Guernsey Co.
G. LIGGETT	Watkins, Union Co.
E. C. ELLIS	Crestvue, Hamilton Co.
L. G. ELY	Fayette, Fulton Co.
H. S. GRIMES	Portsmouth, Scioto Co.
ALBERT HALE	Mogadore, Summit Co.
J. S. STUCKEY	Van Wert, Van Wert Co.
W. W MILLER, *Secretary*	Columbus.
J. W. FLEMING, *Assistant Secretary*	Columbus.

EXECUTIVE COMMITTEE.

J. T. ROBINSON, *President.*
J. C. BOWER,
H. S. GRIMES.
A. J. CLARK
G. LIGGETT,

FARMERS' INSTITUTE COMMITTEE.

L. G. ELY, *Chairman.*
C. BORDWELL.
ALBERT HALE,

OFFICERS AND MEMBERS FOR 1898.

C. BORDWELL, *President*	Batavia, Clermont Co.
L. G. ELY, *Vice-President*	Fayette, Fulton Co.
J. C. BOWER, *Treasurer*	Columbus, Franklin Co.
A. J. CLARK	Cambridge, Guernsey Co.
G. LIGGETT	Watkins, Union Co.
E. C. ELLIS	Crestvue, Hamilton Co.
H. S. GRIMES	Portsmouth, Scioto Co.
ALBERT HALE	Mogadore, Summit Co.
J. S. STUCKEY	Van Wert, Van Wert Co.
S. H. ELLIS	Springboro, Warren Co.
W. W. MILLER, *Secretary*	Columbus.
J. W. FLEMING, *Assistant Secretary*	Columbus.

EXECUTIVE COMMITTEE.

C. BORDWELL, *President*.
J. C. BOWER,
A. J. CLARK,
G. LIGGETT,
H. S. GRIMES.

FARMERS' INSTITUTE COMMITTEE.

L. G. ELY, *Chairman*.
ALBERT HALE,
J. S. STUCKEY.

AUDITING COMMITTEE.

E. C. ELLIS, *Chairman*.
H. S. GRIMES,
S. H. ELLIS.

LIST OF MEMBERS

OF THE

Ohio State Board of Agriculture

FROM 1850 TO 1898.

LIST OF MEMBERS OF THE OHIO STATE BOARD OF AGRICULTURE.

FROM 1850 TO 1898.

Name.	Years of service inclusive.	Postoffice.
M. L. Sullivant†	1850–53	Columbus
S. Medary†	1850–53	Columbus
M. B. Bateham†	1850–51	Columbus
D. Lapham†	1850–51	Cincinnati
F. R. Elliott	1850–51	Cleveland
J. T. Pugsley	1850–51	Convenience
Arthur Watts†	1850–52	Chillicothe
J. M. Edwards	1850–52	Canfield
C. Springer†	1850–52	Meadow Grove
J. G. Gest	1850–54	Xenia
S. Halloway	1850–51	St. Clairsville
Allen Trimble†	1850–51	Hillsboro
William Case†	1852–53	Cleveland
Philo Adams†	1852–53	Huron
R. W. Musgrave†	1852–57	Sulphur Springs
R. W. Steele	1853–56	Dayton
William H. Ladd	1853–56	Richmond
D. McIntosh	1853–54	Shalersville
J. T. Worthington†	1853–56	Chillicothe
Joseph Sullivant†	1854–55	Columbus
John K. Greene	1854–57	Cincinnati
James L. Cox	1854–55	Zanesville
B. Stedman†	1854–57	Cleveland
Alexander Waddle†	1855–60	South Charleston
Abel Krum	1855–58	Cherry Valley
Lucien Buttles†	1856-59	Columbus
G. W. Baker†	1856–57	Marietta
John M. Milliken†	1857–62	Hamilton
Luther Smith	1857–58	West Liberty
Thomas S. Webb	1857–58	Massillon
Norton S. Townshend‡ †	1858–63	Avon
L. Q. Rawson	1858–59	Fremont
James M. Trimble†	1858–61	Hillsboro
John Rebert†	1858–61	Lancaster
D. E. Gardner†	1859–64	Toledo
William Dewitt	1859–64	Cleveland
C. W. Potwin	1859–62	Zanesville
T. C. Jones†	1860–67	Delaware
Henry B. Perkins	1860–63	Warren
David Taylor†	1861–66	Columbus
Jacob Egbert†	1862–63	Lebanon
Nelson J. Turney†	1862–69	Circleville
D. McMillan†	1863–70	Xenia
W. R. Putnam	1863–64	Marietta
William F. Greer†	1864–67	Painesville
James Fullington†	1864–69	Irwin Station

MEMBERS OF THE STATE BOARD OF AGRICULTURE—Continued.

Name.	Years of service inclusive.	Postoffice.
William B. McClung ‡	1864–71	Troy
James W. Ross	1865–70	Perrysburg
R. R. Donnelly †	1865–68	Wooster
James Buckingham	1865–72	Zanesville
J. Park Alexander	1867–70	Akron
Norton S. Townshend ‡ †	1868–69	Avon
William Lang†	1868–71	Tiffin
D. C. Richmond †	1869–74	Sandusky
R. P. Cannon	1870–75	Aurora
James B. Jamison	1860–77	Cadiz
L. G. Delano †	1870–75	Chillicothe
L. B. Sprague §	1871–76	Springfield
Simpson Harmount	1871–76	New Philadelphia
John A. Warder†	1871–76	Cleves
W. S. Hickox	1872–73	Mansfield
B. W. Carlisle †	1872–79	Hooker's Station
Justus C. Stephens	1873–74	Kenton
John M. Pugh	1874–79	Columbus
L. B. Wing	1875–80	Newark
Russell C. Thompson†	1875–76	Sylvania
Leo Weltz †	1876–83	Wilmington
D. L. Pope*	1876–81	Welshfield
Charles Smith †	1877–80	Marion
E. T. Stickney †	1877–78	Republic
A. E. Stone	1877–78	Gallipolis
Peter Murphy	1877–80	Hughes' Station
W. N. Cowden	1878–83	Quaker City
R. Baker	1879–82	Elyria
Arvine C. Wales †	1879–82	Massillon
R. H. Haymen	1880–81	Portsmouth
O. P. Chaney	1880–82	Canal Winchester
C. D. Bailey	1881–88	Gallipolis
J. C. Levering	1881–86	Levering
William S. Foster	1881–88	Urbana
L. B. Harris †	1882–87	Upper Sandusky
J. H. Brigham	1882–89	Delta
L. N. Bonham	1883–86	Oxford
H. Talcott †	1883–87	Jefferson
N. A. Sims	1883–85	Columbus
T. P. Shields	1884–87	Watkins
John Pow	1884–89	Salem
S. H. Hurst	1884–89	Chillicothe
J. J. Sullivan*	1887–88	Millersburg
Joseph H. Terrell	1887–88	New Vienna
J. G. Russell	1887–90	Mt. Gilead
H. G. Tryon†	1888–91	Willoughby
J. M. Black‖	1888–90	Hanover
A. H. Kling	1889–96	Marion
H. S. Grimes	1889–90	Portsmouth
A. J. Clark	1889	Cambridge
W. W. Miller	1889–94	Castalia
J. W. Pollock	1890–93	Cedarville
N. Ohmer	1890–95	Dayton
L. G. Ely	1890–91	West Unity
E. L. Hinman	1890–93	Columbus
J. C. Bower ‡	1891	Athens
George Lewis	1891–94	Van Wert
Chester Bordwell	1892–93	Batavia

MEMBERS OF THE STATE BOARD OF AGRICULTURE—Concluded.

Name.	Years of service inclusive.	Postoffice.
F. A. Derthick	1892–95	Mantua
J. T. Robinson	1894–97	Rockaway
G. Liggett	1894	Watkins
J. H. Pringle	1894–95	Cardington
E. C. Ellis	1895	Crestvue
Chester Bordwell	1895	Batavia
L. G. Ely	1896	Fayette
H. S. Grimes	1896	Portsmouth
Albert Hale	1896	Mogadore
J. S. Stuckey	1897	Van Wert
S. H. Ellis	1898	Springboro

†Deceased.
‡Removed to Columbus.
*Removed to Cleveland.
¶Removed to Plattsburg.
‖Removed to Frazeysburg.

TABLE SHOWING THE PLACE AND RECEIPTS OF EACH STATE FAIR HELD; ALSO A LIST OF THE OFFICERS FOR EACH YEAR OF FAIR.

Year	President.	Treasurer.	Secretary.	Place of fair.	Receipts
1850	M. L. Sullivant*	Samuel Medary*	M. B. Bateham*	Cincinnati	$8,036 18
1851	same	same	W. W. Mather*	Columbus	8,204 09
1852	Arthur Watts*	same	same	Cleveland	13,360 00
1853	Samuel Medary*	M. L. Sullivant*	Geo. Sprague	Dayton	13,996 37
1854	R W. Musgrave*	Joseph Sullivant*	same	Newark	8,824 58
1855	J. T. Worthington*	same	same	Columbus	9,745 54
1856	William H. Ladd	Lucien Buttles*	same	Cleveland	16,684 20
1857	Alexander Waddle*	same	John H. Klippart*	Cincinnati	17,530 75
1858	John M. Millikin*	same	same	Sandusky	9,997 70
1859	N. S. Townshend*	same	same	Zanesville	8,958 82
1860	Alexander Waddle*	Charles W. Potwin	same	Dayton	11,998 50
1861	Darwin E. Gardner*	same	same	“	8,036 18
1862	Thomas C. Jones*	David Taylor*	same	Cleveland	11,260 64
1863	N. S. Townshend*	same	same	“	11,142 00
1864	Nelson J. Turney*	same	same	Columbus	12,620 54
1865	same	same	same	“	10,658 65
1866	William B. McClung	same	same	Dayton	14,035 80
1867	Daniel McMillan*	James Buckingham	same	“	18,692 98
1868	James Fullington*	same	same	Toledo	15,606 25
1869	same	same	same	“	19,606 50
1870	James W. Ross	J. Park Alexander	same	Springfield	18 252 85
1871	William Lang*	James Buckingham	same	“	16,460 25
1872	James Buckingham	Simpson Harmount	same	Mansfield	19,149 45
1873	Lincoln G. Delano*	same	same	“	22,517 50
1874	same	same	same	Columbus	27,674 79
1875	R. P. Cannon	same	same	“	20,539 30
1876	S. Harmount	J. M. Pugh	same	“	11,909 61
1877	J. B. Jamison	same	same	“	21,151 21
1878	J. M. Pugh	L. B. Wing	same	“	11,979 50
1879	B. W. Carlisle*	same	J. W. Fleming	“	30,703 35
1880	L. B. Wing	D. L. Pope	W. I. Chamberlain	“	23,682 20
1881	D. L. Pope	Leo Weltz*	same	“	29,706 16
1882	R. Baker	W. N. Cowden	same	“	34,082 52
1883	W. N. Cowden	L. B. Harris*	same	“	38,513 78
1884	W. S. Foster	same	same	“	33,306 48
1885	C. D Bailey	J. C. Levering	same	“	29,796 51
1886	L. N. Bonham	L. B. Harris*	same	“	30,533 17
1887	J. H. Brigham	same	L. N. Bonham	“	30,902 10
1888	John Pow	J. G. Russell	same	Centennial year, no fair	
1889	same	same	same	Columbus	19,637 41
1890	J. G. Russell	A. H. Kling	same	“	27,574 55
1891	J. M. Black	same	same	“	33.878 64
1892	A. H. Kling	W. W. Miller	same	“	30,357 19
1893	J. W. Pollock	same	same	“	19,350 93
1894	W. W. Miller	F. A. Derthick	same	“	27,260 25
1895	A. J. Clark	same	W. W. Miller	“	33,966 13
1896	J. C. Bower	A. J. Clark	same	“	22,531 20
1897	J. T. Robinson	J C. Bower	same	“	30,369 48
1898	C. Bordwell	same	same	“	

*Deceased.

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TRANSACTIONS

OF THE

Ohio State Board of Agriculture,

FOR THE YEAR 1897.

DEPARTMENT OF AGRICULTURE.

COLUMBUS, O., January 14, 1897.
9.30 P. M.

The following gentlemen comprising the State Board of Agriculture for 1897, met for organization:

HOLD OVER MEMBERS.

J. T. Robinson	Rockaway, Seneca county.
G. Liggett,	Watkins, Union county.
L. G. Ely	Fayette, Fulton county.
Albert Hale	Mogadore, Summit county.
H. S. Grimes	Portsmouth, Scioto county.

NEWLY ELECTED MEMBERS.

J. C. Bower	Columbus, Franklin county.
A. J. Clark	Cambridge, Guerrnsey county.
C. Bordwell	Batavia, Clermont county.
E. C. Ellis	Crestvue, Hamilton county.
J. S. Stuckey	Van Wert, Van Wert county.

The oath of office was administered by J. W. Fleming, notary public.

OFFICERS OF THE BOARD.

J. T. Robinson	President.
C. Bordwell	Vice President.
J. C. Bower	Treasurer.
W. W. Miller	Secretary.
J. W. Fleming	Assistant Secretary.

Capt. S. N. Cook and Mr. Geo. Cole appeared before the Board, representing the Columbus Business Men's League, to request the use of the Fair grounds for a meeting of the Ohio Branch of the League of American Wheelmen. The matter was very fully discussed, when on motion of Mr. Grimes, it was agreed that the request be granted and providing that the compensation and conditions of the grant be referred to the Secretaries.

On motion of Mr Ely it was agreed that the rule governing the use of the Fair grounds be so modified as to be waived by the Secretary in extreme cases, where the best interests of the Board could be served.

The Secretary explained the action of himself and Assistant, in providing permanent badges for the Board, thus avoiding the expense of new badges each year.

On motion of Mr. Hale, the action of the Secretaries and the expense incurred in providing permanent badges were approved, and they were further directed to have the badges properly engraved.

The President announced the appointment of the following standing committees for the year:

EXECUTIVE COMMITTEE—J. C. Bower, A. J. Clark, H. S. Grimes, G. Liggett.

FARMERS' INSTITUTE COMMITTEE—L. G. Ely, C. Bordwell, Albert Hale.

The President also announced the following assignment of departments for the State Fair of 1897:

First Department—Horses	A. J. Clark.
Second Department—Cattle	L. G. Ely.
Third Department—Sheep	G. Liggett.
Fourth Department—Swine	J. S. Stuckey.
Fifth Department—Poultry	J. S. Stuckey.
Sixth Department—Farm Products	Albert Hale.
Seventh Department—Fruits	Albert Hale.
Seventh Department—Plants and Flowers	Albert Hale.
Eighth Department—Machinery and Implements	C. Bordwell.
Ninth Department—Mechanics' and Manufacturers' Products	E. C. Ellis.
Tenth Department—Woman's Work	H. S Grimes.
Eleventh Department—Merchandise, etc	E. C. Ellis.
Twelfth Department—Fine Arts	H. S. Grimes.

On motion, the Board adjourned to meet at the call of the President.

TUESDAY, May 18, 8 o'clock P. M.

The Board met pursuant to the call of the President, members all present. The reading of the minutes of the preceding meeting was dispensed with.

The Secretary stated the object of the meeting to be the appointment of expert judges and other miscellaneous business pertaining to the Fair and other divisions of the Department.

On motion, the Board proceeded to the appointment of judges, resulting as follows:

HORSES.

Alex. Galbraith, Janesville, Wis	All Classes.
Chas. H. Ganson, Urbana O	Starter.
Theo. Doty, Portsmouth, O	Speed.
V. D. Craig, Washington, O	Speed.
Alex. Galbraith, Janesville, Wis	Speed.

It was agreed that the matter of compensation to Mr. Gailbraith, who was appointed to serve in classes and in speed, be referred to Mr. Clark, the member in charge.

CATTLE.

On motion ot Mr. Stuckey, the appointments were referred to the member in charge, Mr. Ely, who is to report names to the Secretary.

Later, Mr. Ely reported the appointment of the following judges:

N. W. Baker, Chauncey, Athens county	Beef breeds.
M. A. Scovell, Lexington, Ky	Dairy breeds.

At this point the Secretary was privileged to submit miscellaneous matter. He first called attention to the matter of Chief of Police for the ensuing Fair, whereupon Mr. Clark moved that this appointment be made to Capt. Alexis Keeler, of Columbus, O., at the same compensation he has heretofore received, which motion prevailed.

The Secretary presented the following telegraphic communication:

THE WESTERN UNION TELEGRAPH COMPANY.

Wooster, O., May, 17, 1897.

Secretary W. W. Miller, State Board of Agriculture.

The State Board of Agriculture is invited to attend dedication of Experiment Station building, June 3d. Invitations mailed.

Chas. E. Thorne.

Consideration of the invitation was postponed until it could be ascertained whether it would be possible to attend as a Board.

The appointment of judges was resumed, with the following result:

SHEEP.

Frank Moore, Greenspring, O	Fine Wools in Classes and Wool Exhibit.
W. N. Cowden, Quaker City, O	Long Wools and Sweepstakes on Fine Wools.
S. H. Todd, Wakeman O	General Judge.

SWINE.

Geo. M. Earnest, Keffer, Pa	Berkshires and small Breeds.
G. R. Botts, Stryker, O	Poland Chinas, Duroc Jerseys and Chester Whites.
W. B. Wallace, Oxford, O	Swine Sweepstakes.

POULTRY.

E. H. Shorb	Van Wert, O.
Ira Kellar	Prospect, O.
M. M. Borger	Mt. Gilead, O.

FARM PRODUCTS.

J. P. Dysert, Rockford, O	Grain and Seeds.
Dr. O. S. Brown, Londonderry, O	Bees, Honey, etc.
Adam Graham, Cleveland, O	Flowers and Plants.

FRUITS.

Daniel Duer, Millersburg, O	Apples.
Geo. W. Crawford, Delaware, O	Grapes.
I. H. Britton, Painesville, O	Peaches, Pears, Quinces and Plums.

WOMAN'S DEPARTMENT AND FINE ARTS.

Mrs. A. L. Sanford, Portsmouth, O	China Painting.
Mrs. Clara Waller, Portsmouth, O	Needle Work.
Mrs. Theo. Doty, Portsmouth, O	Canned Goods, etc.
Mrs. Jessie Shafer, Uhrichsville, O	Household Fabrics.

ENTRY CLERKS.

Miss Jennie Fleming	Columbus, O.
Miss Essie Tynes	Portsmouth, O.

ASSISTANTS.

Miss Sadie Oldham	Cambridge, O.
Mrs. Louella Clare	Fayette, O.
Mrs. Ollie Ely	Fayette, O.
Miss M. L. Vinson	Dayton, O.
Mrs. S. D. Webb	Middleport, O.
Miss Bertha Waite	Portsmouth, O.
Mrs. Albert Hale	Mogadore, O.
Mrs. J. H. Earnshaw	Columbus, O.
Mrs. Dora C. White	Castalia, O.
Miss Mrytle Liggett	Watkins, O.
Miss Carrie Ellis	Crestvue, O.
J. H. Stone	Columbus, O.

On motion of Mr. Clark, it was agreed that the compensation to expert judges be five dollars per day for time actually engaged in judging, to which shall be added traveling expenses to and from Columbus.

On motion of Mr. Grimes, it was ordered that the pay of Superintendents, Assistant Superintendents and Helpers remain the same as last year, viz., four dollars, three dollars and three dollars, respectively, these employees to bear their own expenses to and from Columbus and on the grounds.

On motion of Mr. Grimes, the matter of time for Superintendents, Helpers and Judges to report for duty, was referred to the members in charge of the respective departments, who will report their action to the Secretary.

On motion of Mr. Stuckey, it was ageed as the sense of the Board, that the issue of complimentary tickets be restricted to cases presenting unusual merit and in recognition of some service to the Fair.

On motion of Mr. Grimes, the Secretaries were authorized to contract for the necessary straw.

The Secretary submitted the affidavit of John Rowan, Secretary of the Clermont County Agricultural Society, claiming for said Society, under a special act of the legislature passed in 1863, a per capita allowance for each of the years since, for Anderson township in Hamilton county, which, by said act, was annexed to Clermont county for agricultural purposes.

The matter was under discussion when the Board adjourned to meet at the call of the President.

FRIDAY, May 21, 10 o'clock, A. M.

The President called the Board together to discuss the matter of conferring upon Col. J. H. Brigham some token of appreciation in recognition of his valuable services in the cause of agriculture, during and since his membership in this body. The matter was very freely discused, it being the unanimous opinion of the Board that this was a most proper step to take, but that the token should be official in its character and embody the action of the State Board of Agriculture rather than of its individual members.

Mr. Grimes submitted the following, which was unanimously adopted:

WHEREAS, Col. J. H. Brigham, now Assistant Secretary of the United States Department of Agriculture, served eight years as a member of the Ohio State Board of Agriculture, one of which as its President, and during which term of service his best efforts were directed toward promoting the interests of the Board and the agriculture of the State and county, and

WHEREAS, Col. Brigham has always been the devoted friend of the farmer and an acknowledged unselfish leader in all matters pertaining to the interests of the farmer, ever ready at any and every call of duty, therefore

Resolved, That this Board expresses to him its high appreciation of his truly valuable services and extend congratulations upon his promotion to a responsible position in the National Government, where he will be able to do still greater good in the cause to which his life has been devoted.

Resolved, That a gold badge, the official emblem of the Ohio State Board of Agriculture, be presented to Col. J. H. Brigham, and the Assistant Secretary of this Board is hereby directed to have the same prepared with a suitable inscription including the years of service in the Board, the year of his presidency, and also the fact of its being presented by this Board, as an official act and of record.

Adjourned to meet at the call of the President.

ADMINISTRATION BUILDING,
STATE FAIR GROUNDS,
COLUMBUS, O., August 30, 1897.

The Board met at 4 o'clock P. M., on call of President Robinson, with all members present except Mr. A. J. Clark, who was confined to his home at Cambridge, O., by serious illness.

On motion of Mr. Grimes, Secretary Miller was directed to write to Mr. Clark and express the sympathy of the members of the Board because of his long continued and painful sickness, and regret on account of his absence from the forty-seventh annual Ohio State and Industrial Exposition. The Secretary was also requested to send a telegram expressive of sympathy, which was done at once.

On motion of Mr. Ellis, the Board unanimously approved the action of the Secretaries in securing the attendance at the Fair of President William McKinley, Secretary of War Gen. R. A. Alger, Secretary of Agriculture Hon. James Wilson, U. S. Senator M. A. Hanna, Gen. Russell Hastings, and Colonel Myron T. Herrick, and their ladies, and the arrangements for receiving and entertaining the Board's guests of honor,

On motion of Mr. Grimes, the Secretary was directed to send a telegram to Hon. A. H. Kling, of Marion, O., an ex-member of this Board, expressing the sympathy and condolence of the Board with him, because of the death of his brother.

On motion of Mr. Hale, the President and two members of the Board, to be selected by him, were constituted a committee to receive and entertain Lieutenant-Governor A. W. Jones and Secretary James Wilson, at the time of their respective visits to the State Fair as guests of the Board, August 31, and September 1.

On motion of Mr. Bordwell, Mr, Grimes was directed to assume charge of the speed classes in the Horse Department of the Fair, in place of Mr. Clark, necessarily absent.

Several manufacturers and business associations of Columbus asked, through the Secretary, for permission to purchase Fair tickets to be given to their employees, at reduced rates, but the Board declined to grant the requests, because of the night entertainments at the Fair, which it was believed would accommodate all persons necessarily engaged in labor during the day.

At 5 o'clock P. M., the Board adjourned to meet on call of the President.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, O., OCT. 28, 1897.
10 o'clock A. M.

The Board met pursuant to call. Members all present. The minutes of the preceding meeting were read and approved.

The Secretaries presented a financial statement, covering receipts and disbursements from the beginning of the fiscal year, Dec. 1, 1896, to September 10, 1897.

On motion of Mr. Liggett, the statement was approved.

On motion of Mr. Grimes, the President and Secretary were directed to execute the notes of the Board and borrow, for necessary expenses, a sum not exeeeding twenty-five hundred dollars.

A communication was presented from James Riley & Son, of Thorntown, Ind., including statements, claiming the ruling out of a hog entered at last Ohio State Fair, as under one year of age, on the ground that the animal was not within the age limit to compete.

Mr. Stuckey, the member in charge of the swine department of the Fair, stated that the animal in question had not been ruled out, as claimed, and that Messrs. Riley & Son, if they had any grievance should have presented it in the form of a protest, as prescribed by the rules, and that not having taken advantage of their privilege to do so, the Board could not be responsible for their neglect. The Secretary was instructed to so reply to the communication.

Communications were presented claiming loss of or damage to a few minor articles exhibited at the last Fair and asking to be compensated, which the Board declined, under the provisions of Article XII of the Rules.

A properly filed protest, against awards in cut flowers made to C. A. Roth, was submitted from E. L. Charles. The grounds claimed for protest were that the exhibits were not sufficient in number and quality, and that undue influence had been used.

Mr. Roth made reply to the protest, and after a statement from Mr. Hale, the member in charge, holding that the grounds were not well taken, it was, on motion of Mr. Grimes, agreed that the protest be not sustained.

In the matter of withholding the premiums awarded to Mr. Roth in the floral department, by order of the member in charge, the member withdrew the order and the premiums were directed to be paid.

The Secretary submitted the following report from the Committee on Farmers' Institutes, which report was adopted and the committee's recommendations agreed to.

COLUMBUS, OHIO, September 28, 1897.

The President and Members Ohio State Board of Agriculture, Columbus, Ohio.

GENTLEMEN: The undersigned, your Farmers' Institute Committee, met at the Department of Agriculture, yesterday, in response to a request to do so by your Secretary, W. W. Miller, and, with Secretary Miller, carefully examined all petitions and requests from the various Farmers' Institute Societies of the State, for the establishment of Farmers' Institutes to be held under the management of the State Board of Agriculture during the coming Institute season of 1897-8.

After a painstaking and exhaustive examination of all papers, petitions and records in the hands of your Secretary, we are unanimously agreed to recommend that Farmers' Institutes be established and held at the places indicated below, and at such times as Secretary Miller may determine.

TOWN.	COUNTY.	TOWN.	COUNTY.
Cherry Fork	Adams	Enon	Clark
Beaver Dam	Allen	New Carlisle	Clark
Harrod	Allen	South Charleston	Clark
Spencerville	Allen	Amelia	Clermont
Loudonville	Ashland	Bethel	Clermont
Polk	Ashland	Mt. Carmel	Clermont
Andover	Ashtabula	Mulberry	Clermont
Geneva	Ashtabula	Blanchester	Clinton
Jefferson	Ashtabula	Wilmington	Clinton
Athens	Athens	Leetonia	Columbiana
Amesville	Athens	Lisbon	Columbiana
Coolville	Athens	New Waterford	Columbiana
Lee	Athens	Keene	Coshocton
Buckland	Auglaize	Plainfield	Coshocton
Cridersville	Auglaize	Warsaw	Coshocton
Kossuth	Auglaize	Bucyrus	Crawford
Barnesville	Belmont	Galion	Crawford
Colerain	Belmont	New Washington	Crawford
Hamersville	Brown	Chagrin Falls	Cuyahoga
Russellville	Brown	Dover	Cuyahoga
Union Plains	Brown	Euclid	Cuyahoga
Monroe	Butler	Strongsville	Cuyahoga
Oxford	Butler	Arcanum	Darke
Ross	Butler	Greenville	Darke
Seven Mile	Butler	Versailles	Darke
Carrollton	Carroll	Defiance	Defiance
King's Creek	Champaign	Hicksville	Defiance
Mingo	Champaign	Delaware	Delaware
Westville	Champaign	Sunbury	Delaware
Catawba	Clark	Berlin Heights	Erie

TOWN.	COUNTY.
Milan	Erie
Sandusky	Erie
Amanda	Fairfield
Carroll	Fairfield
Pleasantville	Fairfield
Bloomingburg	Fayette
New Martinsburg	Fayette
Grove City	Franklin
Groveport	Franklin
Westerville	Franklin
Delta	Fulton
Wauseon	Fulton
Clipper Mills	Gallia
Rio Grande	Gallia
Burton	Geauga
Cedarville	Greene
Jamestown	Greene
Xenia	Greene
Cambridge	Guernsey
Quaker City	Guernsey
Blue Ash	Hamilton
Mt. Healthy	Hamilton
Newtown	Hamilton
Arcadia	Hancock
Benton Ridge	Hancock
Mt. Blanchard	Hancock
McComb	Hancock
Ada	Hardin
Forest	Hardin
Cadiz	Harrison
Freeport	Harrison
Deshler	Henry
McClure	Henry
Ridgeville	Henry
Hillsboro	Highland
Mowrystown	Highland
Rainsboro	Highland
Laurelville	Hocking
Logan	Hocking
Killbuck	Holmes
Millersburg	Holmes
New London	Huron
North Fairfield	Huron
Townsend	Huron
Camba	Jackson
Mt. Pleasant	Jefferson
Richmond	Jefferson
Smithfield	Jefferson
Centerburg	Knox
Danville	Knox
Mt. Vernon	Knox
Painesville	Lake
Willoughby	Lake
Rockwood	Lawrence
Brownsville	Licking
Granville	Licking
Jersey	Licking
Utica	Licking
Bellefontaine	Logan
De Graff	Logan
West Mansfield	Logan
Copopa	Lorain
North Ridgefield	Lorain
Wellington	Lorain
Sylvania	Lucas
Waterville	Lucas
London	Madison
Plain City	Madison
Canfield	Mahoning
North Jackson	Mahoning
North Lima	Mahoning
Caledonia	Marion
Marion	Marion
Waldo	Marion
Brunswick	Medina
Chatham	Medina
Seville	Medina
Chester	Meigs
Dyesville	Meigs
Ft. Recovery	Mercer
Rockford	Mercer
Wabash	Mercer
Covington	Miami
Piqua	Miami
West Charleston	Miami
Beallsville	Monroe
Woodsfield	Monroe
Centerville	Montgomery
Germantown	Montgomery
Vandalia	Montgomery
Chester Hill	Morgan
Iberia	Morrow
Marengo	Morrow
Chandlersville	Muskingum
Dresden	Muskingum
Fultonham	Muskingum
New Concord	Muskingum
Belle Valley	Noble
Summerfield	Noble
Oak Harbor	Ottawa
Port Clinton	Ottawa
Antwerp	Paulding
Oakwood	Paulding
Payne	Paulding

TOWN.	COUNTY.
Rehoboth	Perry
Sayre	Perry
Thornville	Perry
Asheville	Pickaway
New Holland	Pickaway
Tarlton	Pickaway
Idaho	Pike
Piketon	Pike
Edinburg	Portage
Garrettsville	Portage
Mantua Station	Portage
Randolph	Portage
Camden	Preble
New Paris	Preble
Columbus Grove	Putnam
Continental	Putnam
Leipsic	Putnam
Adario	Richland
Butler	Richland
Lexington	Richland
Lucas	Richland
Frankfort	Ross
Kingston	Ross
Clyde	Sandusky
Fremont	Sandusky
Haverhill	Scioto
Mt. Joy	Scioto
Scioto	Scioto
Bloomdale	Seneca
Green Spring	Seneca
Tiffin	Seneca
Jackson Center	Shelby
Sidney	Shelby
Alliance	Stark
Canal Fulton	Stark
Marlboro	Stark
New Berlin	Stark
North Springfield	Summit
Osborn Corners	Summit
Girard	Trumbull
Hartford	Trumbull
Kinsman	Trumbull
Newton Falls	Trumbull
Gnadenhutten	Tuscarawas
Mineral Point	Tuscarawas
New Philadelphia	Tuscarawas
Marysville	Union
Richwood	Union
Convoy	Van Wert
Ohio City	Van Wert
Van Wert	Van Wert
New Plymouth	Vinton
Wilkesville	Vinton
Franklin	Warren
Lebanon	Warren
Waynesville	Warren
Barlow	Washington
Watertown	Washington
Creston	Wayne
Lattasburg	Wayne
Shreve	Wayne
Wooster	Wayne
Bryan	Williams
Montpelier	Williams
Bloomdale	Wood
Bowling Green	Wood
Grand Rapids	Wood
Nevada	Wyandot
Upper Sandusky	Wyandot

Respectfully submitted,

L. G. ELY,
C. BORDWELL,
ALBERT HALE,
Committee.

Secretary Miller presented your Committee with a list of the Farmers' Institute lecturers who served the Board during the Institute season of 1896-97, and probably available for the season of 1897-98, and after carefully examining all reports from local Institute societies and all papers on file with the Secretary relative to the efficiency and acceptability of these gentlemen as public lecturers, we would recommend the reappointment of the following named lecturers for the ensuing Institute season of 1897-98:

FROM OHIO STATE UNIVERSITY.

Prof. Wm. R. Lazenby,
Prof. W. A Kellerman,
Chas W. Burkett.
Prof. W. David Gibbs,
Prof. David S. White,

FROM THE OHIO AGRICULTURAL EXPERIMENT STATION.

Chas. E. Thorne,
W. J. Green,
F. M. Webster.
J. Fremont Hickman,
Augustine D. Selby.

FARMERS.

John Begg, Columbus Grove, O.
W. N. Cowden, Quaker City, O.
F. A. Derthick, Mantua, O.
S. H. Ellis, Springboro, O.
E. E. Elliott, Morning Sun, O.
W. W. Farnsworth, Waterville, O.
C. M. Freeman, Rex, O.
S. H. Todd, Wakeman, O.
J. F. Greene, Sandusky, O.
T. C. Laylin, Norwalk, O.
Theo. F. Longenecker, Dayton, O.
S. K. McLaughlin, Hurford, O.
J. L. Roudebush, Stonelick, O.
John L. Shawver, Bellefontaine, O.
George E. Scott, Mt. Pleasant, O.
C. G. Williams, Gustavus, O.

We find on file with your Secretary applications and recommendations for the appointment of a large number of persons as Farmers' Institute lecturers, to be employed by the Board, persons who have not recently, or never, served the Board, from which list we recommend the appointment of the following gentlemen :

O. E. Bradfute, Cedarville, O.
B. H. Brown, Oxford, O.
J. Al Dobie, Gutman, O.
John Gould, Aurora Station, O.
G. C. Housekeeper, Bowling Green, O.
Dr. F. B. McNeal, Alcony, O.
H. P. Miller, Sunbury, O.
Thos. J. Miller, Leipsic, O.
M. C. Morris, Shandon, O.
M. I. Todd, Wakeman, O.
A. L. White, Norwich, O.
J. E. Wing, Mechanicsburg, O.

All of which is most respectfully submitted.

L. G. Ely,
C. Bordwell,
Albert Hale,
Committee.

On motion, a recess was taken until 2 o'clock P. M.

After recess, the Board reassembled and proceeded to the transaction of miscellaneous business.

A request from the First United Presbyterian Church for a contribution was necessarily declined, the Board having no authority to use its funds for such purposes.

Mr. B. I. Jones made a written request for additional compensation as superintendent of the horse department, claiming unusual service.

It was agreed that no action could be taken, as settlement had been made at the price agreed upon for such service by the Board and accepted by appointees.

The Secretary presented a statement showing the complimentary tickets prepared and issued for the last State Fair, together with the associations and persons to whom issued.

The Secretary reported the cost and settlement of matters pertaining to the reception and entertainment of President William McKinley and party, as guests of the Board at the last Ohio State Fair, all of which was approved.

On motion of Mr. Grimes, it was recommended that the Secretaries of the Board should, at the Board's expense, hold and represent this Board's memdership in the Columbus Board of Trade.

On motion of Mr. Stuckey, the Secretaries were instructed to co-operate with the Columbus Board of Trade and Columbus biusness men generally, with reference to locating and holding at Columbus, the contemplated Centennial celebration of the State in 1903.

The Secretary sudmitted a communication from Prof. J. Fremont Hickman, recommending a revision of the dairy tests.

On motion of Mr. Grimes, the matter was referred to the Secretaries with power to act.

On motion of Mr. Ellis, the Board adjourned to meet at the call of the President.

DEPARTMENT OF AGRICULTURE.

COLUMBUS O., January 10, 1898.

7:30 P. M.

The Board met pursuant to call. Members all present. President Robinson called the meeting to order. The Secretary read the minutes of the preceding meeting, which were, on motion, approved.

Request being made for a hearing, the Board agreed to meet representatives of fertilizer manufacturers at 9 o'clock P. M.

The matter of arranging for a milk test in 1898, having at a former meeting been referred to the Secretaries, with power to act, was reported as being completed and published as follows :

TEST OF MILK COWS

To be made under the auspices of the Ohio State Board of Agriculture and the Ohio Agricultural Experiment Station, at any time prior to August 22, 1898. Extended to the following Breeds: JERSEYS, GUERNSEYS, SHORTHORNS. RED POLLED, AYRSHIRES, HOLSTEINS, any other Milk Breed.

CONDITIONS.

1. Any owner desiring to enter a cow for test shall notify W. W. Miller, Secretary of the State Board of Agriculture, Columbus, Ohio, and state when he desires the test to be made.

2. Owners entering cows for test, will be required to pay to the tester his traveling and incidental expenses in making the test, but no per diem will be charged. Tests will be made as near as possible on the date requested by owners, in their entries made to the Secretary.

3. The test to be limited to cows in Ohio and registered in their appropriate records. Each entry will be entitled to two trials, if desired by the owner, he to pay, each time, the expenses of the tester, but no per diem, and either of the two tests to be taken as the basis of the award.

4. Entries and tests may be made at any time prior to August 22, 1898, but all cows entered for the test must be exhibited at the Ohio State Fair of 1898, when the awards will be made. No award will be made to any owner whose cow is not present during the Fair, unless, in the meantime, the cow has died, or contracted some contagious disease, in which case such fact must be clearly set forth in the form of an affidavit, made and sworn to before a resident Justice of the Peace, or Notary Public, and signed by the owner and two other disinterested persons whose knowledge of the case must be definite. Said affidavit must be received by the Secretary of the State Board of Agriculture not later than the first day of the Fair.

5. Change of ownership of cow not to affect the award, provided all other conditions are complied with.

6. Tests will be made, so far as practicable, by the same tester, selected from the official staff of the Ohio Agricultural Experiment Station, who will seal the samples of milk as soon as drawn and deliver the same to the chemist of the Station, together with the name, age and breed of the cow, and the name and P. O. address of the owner. The chemist will make the analysis, keep record of the same and prepare report to appear in the reports of both the Station and the State Board of Agriculture.

7. Cows entered for the test may be fed at the discretion of the owner, but the amount and kind of feed must be carefully reported in writing to the tester at the time of the test, and, if he desires must be allowed to take samples of feed for analysis. In addition, the owner shall file with the Secretary of the State Board of Agriculture, before the result of the analysis will be made known, an affidavit, that during the test and for two weeks prior thereto, no drugs or condiments were fed, or anything but water given to drink.

THE FOLLOWING PRIZES ARE OFFERED FOR EACH OF THE BREEDS ABOVE MENTIONED.

For the largest yield of fat from twenty-four (24) hours' milk, taken from the cow at two or three milkings, at the option of the owner, the same day and determined by chemical analysis of samples taken by the tester from the Experiment Station, the cow having been milked out clean by the tester the evening before the test—

First prize..Silver Cup.
Second prize...Silver Medal.

For the largest yield of solids not including fat—

First prize..Silver Cup.
Second prize...Silver Medal.

CHAMPIONSHIP CLASS.

Cow of any breed, making the largest amount of butter fat and largest amount of solids, not fat, in the above tests..Championship Cup.

GRAND SWEEPSTAKES.

Herd of five cows, tested at one time, belonging to one herd and owned by one breeder, producing the largest amount of butter fat, and largest amounts of solids, not fat, within twenty-four hours, and according to the conditions of the test ....Grand Sweepstake Plate.

Cow producing the greatest amount of butter fat..Silver Medal, Engraved and Encased.

Cow producing the greatest amount of solids, not fat...Silver Medal, Engraved and Encased.

Cow producing the greatest amount of milk, analyzing not less than three per cent. butter fat..Silver Medal, Engraved and Encased.

The Assistant Secretary presented a financial statement covering the fiscal year ending December 1, 1897, and the full month of December, making a showing for thirteen months, in order to hereafter make the fiscal year of the Board correspond with the calendar year. After the reading of the statement, the Committee appointed by the President to audit the books and accounts, reported their finding to be as set forth in the statement presented, which report was approved.

The Secretary reported that he had made an effort to bring to some satisfactory conclusion the contract between the Board and The Harmon Roofing Company, in relation to the repair of roofs on Fair ground buildings.

On motion of Mr. Grimes, the action of the Secretary was approved.

On motion of Mr. Stuckey, the Secretary was instructed to notify parties having private exhibition buildings on the Fair grounds, to repair the same where necessary, otherwise the buildings shall be removed from the grounds.

On motion, the revision of the premium list was deferred until a future meeting.

The Secretary presented a communication relative to the organization of the Hamilton County Agricultural Society, consideration of which was, on motion of Mr. Ellis, postponed to a future meeting.

The Secretary submitted a communication from Robt. Hood, relative to retaining moisture in the soil, and requesting the privilege of presenting his views of the matter before the Board.

On motion of Mr. Bower, the subject was referred to the Secretary.

The Secretary presented a statement and commented upon the work of fertilizer inspection and analysis and the organization and management of Farmers' Institutes, which statement, on motion of Mr. Grimes, was ordered to be placed on file and the thanks and approval of the Board extended to Secretary Miller for the successful work shown under his administration.

The Secretary reported the passage of an act relating to the tenure of office of members of the State Board of Agriculture, and also the necessity of some enactments to amend the fertilizer law, and certain laws relating to the live stock interests of the State.

On motion of Mr. Ely, the Secretary was authorized and directed to seek the enactment of measures to correct and provide law in the directions suggested.

The hour having arrived for receiving the representative fertilizer manufacturers, they presented themselves and were introduced by Mr. Prescott.

On motion of Mr. Grimes, the representatives were requested to select their spokesman and present their case.

Mr. Prescott, the President of the Fertilizer Manufacturers' Association, was the spokesman selected, and he proceeded to explain the fertilizer business from the manufacturers' standpoint and to argue for the abolishing of the publication of values in the reports issued by the Secretary.

Secretary Miller made explanations, and presented arguments in reply to the gentleman and in support of the methods pursued by himself as Secretary of the Board.

Mr. Grimes expressed the confidence of the Board in the work of its Secretary, and requested some further explanations from the spokesman of the fertilizer representatives, relative to valuations.

On motion of Mr. Grimes, the President of the Fertilizer Manufacturers' Association, Mr. Prescott, was requested to reduce their grievances and claims to writing and present the same for the consideration of the Board, at a future meeting to be held this week.

Adjourned to meet at call of the President.

THURSDAY EVENING, January 11, 7:30 P. M.

The Board met upon call of the President, all members present except Mr. Grimes.

The Secretary supplemented his remarks at the last meeting with some further statements relative to commercial fertilizers and his methods of obtaining information and arriving at values.

Mr. Harmon, representing the Harmon Roofing Company, of Auora, Ohio, and R. A. Neil, of Columbus, O., were accorded the privilege of speaking in reference to the contract entered into by said parties, with this Board, for repairing the roofs on State Fair ground buildings, which contract, Mr. Harmon stated, they had been unable to fulfill. Mr. Harmon claimed to have performed considerable work at an expense of several hundred dollars, and though having failed to fill the requirements of the contract, or complete the work as agreed, he hoped the Board would see its way clear to allow him something for time and money expended.

At this point in the proceedings, Hon. Henry T. Chittenden, by previous engagement, appeared before the Board in the interest of the proposed Ohio Centennial celebration in 1903, and the roof matter was deferred until Mr. Chittenden should be heard. The gentleman explained to the Board the position of Columbus with reference to the location of the proposed centennial, and the encouragement and support that would be extended in event of its location here. He suggested that Columbus was the central point for all Ohio people, and that the State Fair grounds was the most desirable place upon which to hold such an exposition. He suggested the consideration of the matter by the Board and the propriety of presenting the subject for the consideration of the State Agricultural Convention.

The Harmon matter being again resumed, the roofing contract was called for and read by the Secretary. Mr. Stuckey held that under this contract the Board could not be expected to pay any sum for work that may have been done or for material that may have been furnished.

Mr. Harmon submitted the following proposition, in writing:

COLUMBUS, January 11, 1898.

To the Ohio State Board of Agriculture:

GENTLEMEN.—In view of the fact that we have been unable to comply with the terms and conditions of a contract entered into by the Harmon Roofing Co. and R. A. Neil, July 23, 1895, for the repair of roofs of buildings on the Ohio State Fair Grounds, located at Columbus, we hereby propose, that if the State Board of Agriculture will, by vote, release us from the fulfillment of said contract and also release the bondsmen to the same, that we hereby relinquish all claims for work and material furnished under said contract, and any payment the Board may wish to make will be considered a donation.

THE HARMON ROOFING CO,
By C. E. HARMON, Vice-Pre's.

On motion, the proposition was accepted and the company released from the fulfillment of its contract.

Mr. Halfhill, of Mercer county, was present and accorded the privilege of speaking in relation to Farmers' Institutes, especially in Mercer county.

Mr. Roudebush, representing the Clermont County Agricultural Society, was present to submit certain facts relating to the per capita county allowance for said Society.

On motion, the matter was referred to Mr. Bordwell and the Secretary, for such relief or aid in adjusting matters as the Board may be able to give.

Adjourned to meet at call of President.

THURSDAY EVENING, January 10, 9 P. M.

The Board met and was called to order by President Robinson Members all present. There being no further business to transact by the Board of 1897, Mr. Ellis moved an adjournment *sine die*, which motion prevailed.

W. W. MILLER, Secretary.
J. W. FLEMING, Assistant Secretary.

DEPARTMENT OF AGRICULTURE.
COLUMBUS, January 13, 1898.
9.30 P. M.

The following gentlemen, comprising the Ohio State Board of Agriculture for 1898, met for organization:

HOLD OVER MEMBERS.

C. Bordwell	Batavia, Clermont county.
A. J. Clark	Cambridge, Guernsey county.
J. C. Bower	Columbus, Franklin county.
E. C. Ellis	Crestvue, Hamilton county.

NEWLY ELECTED MEMBERS.

G. Liggett	Term, 4 years	Watkins, Union county.
L. G. Ely	Term, 3 years	Fayette, Fulton county.
H. S. Grimes	Term, 3 years	Portsmouth, Scioto county.
Albert Hale	Term, 2 years	Mogadore, Summit county.
S. H. Ellis	Term, 2 years	Springboro, Warren county.

The following are the officers:

C. Bordwell	President.
L. G. Ely	Vice President.
J. C. Bower	Treasurer.
W. W. Miller	Secretary.
J. W. Fleming	Assistant Secretary.

CROP AND LIVE STOCK STATISTICS

AS ESTIMATED BY THE

Ohio State Board of Agriculture,

From Returns Received from its Corps of Regular Township Crop Correspondents,
During the Season of 1897.

The following crop reports, together with comments made at the time, are selected from the regular monthlies issued by the Department, being those in which account was taken of the acreage and estimated total production of the principal crops of the state, the information being published and sent to farmers and the agricultural press within a few days after the information was received and results arrived at, so as to be of benefit in the distribution of the crop and in determining the probable requirements for succeeding crops. These selected reports are published in this annual report as a matter of record and for future reference and comparison and not as a matter of benefit in a pecuniary sense. The monthly reports are based upon estimates returned to the Department during the growing and harvesting seasons by the large corps of correspondents who are practical, intelligent and observing farmers, and their estimates can be relied upon as approximately correct.

The monthly crop reporting system, under the direction of the Department of Agriculture, was inaugurated and is still continued for the purpose of furnishing to the producer prompt information bearing on the current year's crops and that may be of value in determining under-production or over-production of any of the principal crops of the state.

The crop statistics as collected by township assessors and returned to the county auditors cannot be given to the people through the state publications until late in the year succeeding the one in which the crop was grown, and hence, while valuable as a matter of record, cannot and do not meet the purpose filled by the monthly reports made and promptly published by the Department of Agriculture. It would be an improvement if the law relating to agricultural statistics returned by township assessors was so amended as to require county auditors to return to the Department of Agriculture within thirty days after the township assessors make their reports to the county auditor. By such an arrangement the figures could be given to the public much earlier than by the system now in vogue.

Following these crop reports will be found a table showing wheat and corn production from 1850 to 1897, inclusive, together with the range of prices, the average prices for each year and the same by series of ten years each.

Following these tables will be found the number of live stock for the years 1896–97 as returned to the Auditor of State.

CONDITION OF CROPS AND LIVE STOCK
MAY 1, 1897.

The following report represents the estimated condition of crops and live stock May 1st, as reported by the regular township crop correspondents of the Department, the reports as received from the townships being averaged for each county and finally for the state:

WHEAT—Condition compared with an average	81	per cent.
BARLEY—Condition compared with an average	84	“
RYE—Condition compared with an average	87	“
OATS—Area sown last year	989,435	acres.
“ Area sown this year compared with 1896	89	per cent.
“ Total estimated area for 1897	878,270	acres.
“ Condition compared with an average	80	per cent.
WHEAT—Drilled	93	“
“ Condition of drilled	84	“
“ Sown broadcast	7	“
“ Condition of broadcast	69	“
“ Damage by Hessian fly	4	“
“ Damage by other insects	1	“
CLOVER—Average date of sowing	March 20.	
“ Acreage compared with last year	94	per cent.
HORSES—Losses during winter and spring	3	“
CATTLE—Losses during winter and spring	3	“
SHEEP—Losses during winter and spring	5	“
HOGS—Losses during winter and spring	6	“
FRUIT BUDS—Winter killed	30	“
BERRY CANES—Condition	82	“

The percentage condition of wheat, for the state, calculated from hundreds of returns from the townships in the state, shows a decline of four points since the estimate made for April 1st. This decline is undoubtedly due to the cold weather and the freezes during the month of April. The plant was not killed to any great extent by the freezes in April, but growth was retarded and the strength and vigor it would have acquired under entirely favorable weather during the month, was not attained. The set back is not so severe but that condition may be improved as the season advances, but it is not likely that the crop can make a full average one. As stated in the last monthly report, the lowest wheat condition is shown in the Northwest counties of the state.

The acreage of oats is considerably short of the very large area sown last year. The figures show 11 per cent. less than last year, but as against an average area for oats there is a shortage of only about 7 or 8 per cent. Owing to continued wet weather, farmers were unable to seed some fields intended for oats and which will now be put to corn or other crops.

Thirty per cent. of the fruit buds are estimated as winter killed, but the killing is almost wholly with peaches. Berry canes are in fairly good condition.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF CROPS AND LIVE STOCK, MAY 1, 1897.

Counties.	Wheat	Barley.	Rye.	Oats.			
	Condition compared with an average.	Condition compared with an average.	Condition compared with an average.	Area sown last year.	Area sown this year compared with 1896.	Total estimated area for 1897.	Condition compared with an average.
	Per ct.	Per ct.	Per ct.	Acres.	Per ct.	Acres.	Per ct.
Adams	87	....	90	2,434	76	1,848	77
Allen	66	....	71	9.739	87	8.473	69
Ashland	92	92	96	18,911	94	17,776	84
Ashtabula	96	....	93	14,881	99	14,732	91
Athens	95	....	95	2,149	69	1,482	71
Auglaize	68	67	78	11,030	81	8,934	67
Belmont	50	....	100	10.994	96	10,554	87
Brown	90	....	92	4,848	78	3,781	79
Butler	87	85	90	9,864	73	7,201	75
Carroll	93	....	84	14,992	91	13,643	78
Champaign	60	....	....	8,128	80	6.502	50
Clarke	69	....	95	5,664	80	4 531	80
Clermont	89	....	85	7,170	87	6,238	69
Clinton	85	89	92	4,916	71	3,490	82
Columbiana	92	....	91	12,095	100	12,095	94
Coshocton	90	....	90	8,603	88	7,571	83
Crawford	83	....	82	19,935	89	17,742	80
Cuyahoga	93	....	88	14,003	87	12,183	83
Darke	65	66	84	19,435	84	16,325	72
Defiance	53	75	81	17,799	105	18,689	82
Delaware	84	100	80	8,850	80	7,080	77
Erie	93	....	92	12,383	98	12,135	94
Fairfield	89	100	86	4,056	85	3,448	74
Fayette	96	92	90	1,174	90	1,057	76
Franklin	83	....	84	7,699	70	5,389	73
Fulton	65	80	83	17,530	85	14.900	80
Gallia	100	....	100	3,011	88	2,650	77
Geauga	94	95	95	10,931	101	11,040	96
Greene	83	50	80	5,651	73	4.125	70
Guernsey	100	....	93	7,895	86	6.780	84
Hamilton	82	80	100	4,292	95	4 077	85
Hancock	77	78	85	13,921	85	11,833	80
Hardin	81	....	89	19 289	77	14,853	62
Harrison	90	....	87	7.230	95	6.868	83
Henry	60	88	79	8,564	90	7,708	72
Highland	82	68	78	2,639	63	1,663	65
Hocking	100	....	100	2,577	90	2,419	90
Holmes	85	78	80	16,517	85	14 039	79
Huron	88	85	92	27,536	92	25,333	65
Jackson	89	....	82	1.817	75	1,363	72
Jefferson	100	....	100	12,065	97	11,703	95
Knox	89	....	89	12,664	87	11 017	86
Lake	92	100	100	6,178	85	5.251	100
Lawrence	93	90	87	3.950	85	3,357	77
Licking	85	....	88	9,937	88	8,745	80
Logan	66	75	78	9,010	76	6.458	73
Lorain	87	....	87	19.639	97	19,050	90
Lucas	78	100	90	10,695	97	10,355	79
Madison	87	....	92	3,330	82	2,731	68
Mahoning	89	....	93	16,015	100	16,015	9[illegible]
Marion	87	....	95	14,604	77	11,245	81
Medina	86	....	68	17.858	104	18,572	93
Meigs	100	....	93	2,259	85	1.920	80
Mercer	55	....	65	20,836	58	12,285	60
Miami	77	82	80	14,826	86	12,750	83
Monroe	95	100	97	8.082	103	8,324	86
Montgomery	80	68	100	13,146	80	10,517	75
Morgan	94	....	88	4,098	80	1 278	74
Morrow	84	....	88	14.017	91	12,755	85
Muskingum	95	100	94	7,162	93	6,660	88
Noble	94	....	77	5,493	93	5,108	82
Ottawa	80	93	90	7.517	101	7,592	95
Paulding	49	85	69	7,154	98	7,011	84
Perry	93	....	83	5,054	76	3,841	69
Pickaway	89	....	91	1,534	85	1 304	65
Pike	90	100	100	4.589	81	3,717	76
Portage	89	....	92	18,405	100	18,405	94

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF CROPS AND LIVE STOCK, MAY 1, 1897—Continued.

Counties	Wheat	Barley.	Rye.	Oats.			
	Condition compared with an average.	Condition compared with an average.	Condition compared with an average.	Area sown last year.	Area sown this year compared with 1896	Total estimated area for 1897.	Condition compared with an average.
	Per ct.	Per ct.	Per ct.	Acres.	Per ct.	Acres.	Per ct.
Preble	74	65	86	13,450	87	11,702	75
Putnam	58	83	76	5,199	70	3,639	81
Richland	75	80	72	25,335	98	24,828	52
Ross	98	90	89	2,995	77	2,306	76
Sandusky	78	73	86	14,535	89	12,936	77
Scioto	97	....	90	4,756	79	3,757	85
Seneca	81	....	87	21,217	91	19,307	84
Shelby	58	69	82	18 085	94	17,000	76
Stark	83	....	87	27,334	94	25,694	76
Summit	94	90	100	16,282	95	15,468	83
Trumbull	91	....	86	18,465	86	15.880	89
Tuscarawas	92	....	90	18,619	99	18,433	79
Union	84	....	90	7,818	82	6.411	88
Van Wert	58	....	67	12,234	94	11,500	85
Vinton	94	....	90	1,755	82	1,439	77
Warren	80	81	86	7,498	83	6,223	70
Washington	100	....	97	8.930	89	7,966	85
Wayne	79	90	85	24,856	99	24,607	73
Williams	55	90	75	22.943	100	22.943	95
Wood	70	82	73	26.656	95	25 323	92
Wyandot	65	92	98	12,226	85	10,392	78
Average per cent	81	84	87	....	89	....	80
Totals	....	....	....	989,435	....	878,270	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF CROPS AND LIVE STOCK, MAY 1, 1897—Continued.

Counties.	Wheat.					
	Drilled.	Condition of drilled.	Sown broadcast.	Condition of broadcast.	Damage by Hessian Fly.	Damage by other insects.
	Per cent.	Per cent.	Per cent.	Per cent	Per cent.	Per cent.
Adams	95	85	5	59	3	2
Allen	99	69	1	50	9	2
Ashtabula	95	94	5	82	10	1
Ashtabula	92	96	8	80	0	0
Athens	90	97	10	87	0	0
Auglaize	97	67	3	34	10	4
Belmont	83	100	17	82	0	0
Brown	90	95	10	80	0	2
Butler	98	33	2	77	2	0
Carroll	98	94	2	90	2	0
Champaign	100	60	0	0	10	0
Clarke	100	72	0	0	7	5
Clermont	89	93	11	72	0	2
Clinton	97	86	3	79	5	2
Columbiana	98	92	2	91	5	2
Coshocton	98	86	2	75	1	0
Crawford	98	83	2	72	6	1
Cuyahoga	94	94	6	68	0	1
Darke	99	65	1	50	15	1
Defiance	92	48	8	57	3	0
Delaware	97	84	3	73	0	0
Erie	97	93	3	86	3	0
Fairfield	97	87	3	73	2	1
Fayette	99	96	1	95	1	0
Franklin	99	83	1	57	1	2
Fulton	96	66	4	75	1	1
Gallia	82	103	18	75	1	0
Geauga	97	95	3	83	1	0
Greene	94	83	6	77	4	0
Guernsey	80	108	20	79	0	0
Hamilton	94	75	6	64	0	0
Hancock	98	90	2	53	3	1
Hardin	96	83	4	80	2	1
Harrison	93	90	5	80	1	0
Henry	95	59	5	53	4	3
Highland	91	84	9	62	3	2
Hocking	95	100	5	95	0	0
Holmes	96	88	4	75	5	1
Huron	95	91	5	71	5	0
Jackson	94	89	6	58	1	0
Jefferson	85	101	15	85	1	0
Knox	97	91	3	65	4	2
Lake	83	92	17	100	0	0
Lawrence	44	97	56	88	2	5
Licking	96	87	4	74	2	1
Logan	97	65	3	43	13	0
Lorain	96	89	4	82	0	2
Lucas	84	80	16	55	4	0
Madison	100	87	0	50	0	0
Mahoning	94	93	6	75	15	1
Marion	95	82	5	67	4	3
Medina	100	91	0	100	1	0
Meigs	96	102	4	95	1	0
Mercer	96	49	4	55	8	1
Miami	98	77	2	65	19	6
Monroe	86	99	14	79	4	2
Montgomery	100	80	0	0	7	2
Morgan	87	96	13	70	1	1
Morrow	96	88	4	63	2	0
Muskingum	94	96	6	63	1	0
Noble	86	97	14	79	2	0
Ottawa	79	84	21	79	0	4
Paulding	77	50	23	22	0	0
Perry	100	93	0	0	1	0
Pickaway	100	89	0	98	3	1
Pike	96	88	4	65	0	3
Portage	99	88	1	53	1	0

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF CROPS AND LIVE STOCK, MAY 1, 1897—Concluded.

Counties.	Wheat.					
	Drilled.	Condition of drilled.	Sown broadcast.	Condition of broadcast.	Damage by Hessian fly.	Damage by other insects.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Preble	100	72	0	0	11	1
Putnam	91	54	9	37	2	2
Richland	96	75	4	60	20	2
Ross	96	97	4	68	1	0
Sandusky	97	78	3	47	7	1
Scioto	85	97	15	94	0	0
Seneca	99	82	1	65	9	0
Shelby	99	55	1	40	12	1
Stark	95	84	5	70	8	3
Summit	100	92	0	0	1	0
Trumbull	99	91	1	60	1	0
Tuscarawas	88	97	12	81	1	0
Union	100	82	0	0	0	0
Van Wert	97	58	3	26	2	2
Vinton	92	96	8	77	0	1
Warren	95	81	5	75	4	0
Washington	87	100	13	95	1	0
Wayne	96	79	4	71	12	3
Williams	85	52	20	45	5	5
Wood	91	70	9	50	2	0
Wyandot	95	87	5	80	10	1
Average per cent	93	84	7	69	4	1

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF CROPS AND LIVE STOCK, MAY 1, 1897—Continued.

Counties.	Clover.		Horses	Cattle.	Sheep.	Hogs.	Fruit.	Berry Canes.
	Date of sowing, days after Feb. 1.	Average compared with last year.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Winter killed.	Condition.
		Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.
Adams	52	93	6	4	8	4	32	90
Allen	57	95	2	2	3	13	34	62
Ashland	50	102	3	2	4	6	44	79
Ashtabula	54	99	4	3	3	3	13	91
Athens	54	90	3	2	19	2	41	97
Auglaize	53	79	7	10	22	17	23	75
Belmont	48	99	2	1	3	2	25	84
Brown	58	90	5	4	8	6	25	72
Butler	55	85	2	1	3	6	22	86
Carroll	50	89	2	1	6	3	27	72
Champaign	60	40	3	3	3	2	0	80
Clark	54	98	2	2	4	5	18	100
Clermont	46	91	0	2	2	2	6	79
Clinton	51	98	2	2	5	18	19	67
Columbiana	51	99	2	2	2	2	39	84
Coshocton	52	96	1	3	2	1	36	89
Crawford	53	96	2	2	3	12	53	72
Cuyahoga	54	95	3	5	7	6	24	94
Darke	49	101	2	2	2	5	19	94
Defiance	52	112	3	3	3	21	29	82
Delaware	54	97	2	2	4	8	24	63
Erie	50	103	1	2	3	2	58	81
Fairfield	51	92	2	2	3	6	31	74
Fayette	53	93	2	1	3	9	38	82
Franklin	53	99	2	3	4	13	21	80
Fulton	54	110	4	2	4	5	34	83
Gallia	43	80	2	1	4	1	40	75
Geauga	55	92	2	4	3	3	15	88
Greene	52	94	4	5	8	8	20	64
Guernsey	50	88	3	3	5	8	28	62
Hamilton	55	84	4	3	3	6	48	84
Hancock	51	98	2	2	5	9	45	61
Hardin	52	101	2	2	4	4	30	82
Harrison	53	100	2	2	5	2	24	90
Henry	53	95	2	1	1	4	27	71
Highland	44	92	6	3	5	12	28	77
Hocking	60	90	0	0	0	0	25	95
Holmes	49	95	1	2	4	2	43	79
Huron	45	96	4	5	5	10	35	89
Jackson	50	88	5	7	10	10	45	73
Jefferson	45	105	5	5	6	4	23	95
Knox	46	99	1	1	3	2	45	87
Lake	60	87	0	0	0	0	28	75
Lawrence	45	92	3	5	6	7	20	81
Licking	45	91	2	2	4	2	25	82
Logan	53	93	2	1	4	7	30	78
Lorain	51	102	2	3	6	2	19	91
Lucas	55	104	2	2	4	5	28	89
Madison	54	79	2	2	4	8	17	87
Mahoning	58	101	3	3	6	3	20	91
Marion	44	89	2	2	7	8	32	73
Medina	52	89	2	1	5	2	16	77
Meigs	39	98	1	2	2	2	13	80
Mercer	58	93	3	2	8	3	48	89
Miami	48	100	4	4	6	5	24	82
Monroe	54	103	3	2	10	2	40	91
Montgomery	35	97	4	4	6	14	25	60
Morgan	52	79	3	1	5	3	30	80
Morrow	49	95	2	2	6	4	27	85
Muskingum	54	90	2	1	5	4	27	86
Noble	50	82	3	3	4	1	38	86
Ottawa	53	110	3	1	2	2	44	89
Paulding	57	110	1	1	1	9	12	95
Perry	44	85	4	5	7	8	32	77
Pickaway	49	83	4	2	6	22	31	75
Pike	52	90	2	2	8	20	15	88
Portage	53	87	21	27	2	2	21	96

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF CROPS AND LIVE STOCK, MAY 1, 1897—Concluded.

Counties.	Clover.		Horses	Cattle.	Sheep.	Hogs.	Fruit.	Berry Canes.
	Date of sowing, days after Feb 1.	Average compared with last year.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Winter killed.	Condition.
		Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct	Per Ct.
Preble	46	106	3	2	5	5	19	88
Putnam	58	102	3	3	5	9	16	79
Richland	50	88	3	4	7	5	39	82
Ross	53	100	2	1	4	10	47	75
Sandusky	52	91	3	2	5	6	58	72
Scioto	50	78	2	2	2	3	38	100
Seneca	53	102	2	2	4	3	47	83
Shelby	57	92	2	3	4	5	32	93
Stark	51	96	3	2	5	6	27	82
Summit	49	96	3	3	3	5	33	89
Trumbull	50	99	2	2	3	3	34	88
Tuscarawas	57	101	3	2	5	2	41	95
Union	56	91	1	1	3	5	26	88
Van Wert	50	90	4	3	3	14	36	86
Vinton	53	99	2	1	4	10	40	75
Warren	40	94	2	2	5	5	17	81
Washington	51	91	3	1	4	3	25	91
Wayne	54	96	5	4	6	7	31	69
Williams	47	110	1	1	2	5	50	82
Wood	66	94	2	2	4	2	33	82
Wyandot	49	97	3	6	12	10	38	86
Average per cent	Mch. 20	91	3	3	5	6	30	82

ACREAGE AND CONDITION OF CROPS AND CONDITION OF LIVE STOCK JULY 1, 1897.

The following report represents the estimated condition or prospect of the items named, as figured from returns received from the regular township crop correspondents of the Department, nearly every township in the State being represented in the returns:

WHEAT—Condition compared with an average	86	per cent
“ —Area plowed up	2	“
BARLEY—Condition compared with an average	87	“
RYE—Area plowed up	1	“
OATS—Condition compared with an average	81	“
CORN—Area planted in 1896	2,904,815	acres
“ —Area planted this year compared with 1896	96	per cent
“ —Estimated area planted this year	2,750,039	acres
“ —Condition compared with an average	71	per cent
“ —Damage by cut worms	4	“
“ —Damage by white grub worms	5	“
CLOVER—Damage by white grub worms	2	“
“ —Product per acre	1¾	tons
“ —Quality compared with an average	92	per cent
POTATOES—Area planted in 1896	137,162	acres
“ —Area planted this year compared with 1896	92	per cent
“ —Estimated area planted this year	125,217	acres
“ —Condition compared with an average	76	per cent
TOBACCO—Area compared with last year	84	“
TIMOTHY—Condition compared with an average	82	“
HORSES—Condition compared with an average	97	“
PASTURES—Condition compared with an average	100	“
COLTS—Number compared with an average	56	“
CATTLE—Condition compared with an average	98	“
CALVES—Number compared with an average	89	“

Wheat ripened fast and is standing up well for the harvest. From the first of May on toward harvest, the wheat kept gradually improving in prospect until now, as the harvest is on, the prospect indicates only about 14 per cent. short of a fair average crop for the state. The distribution is fairly uniform throughout all sections of the state, except a few counties in the extreme northwest portion, where the prospect has been poor through the entire season, but even in these few poor counties, as indicated last month, there has been slight improvement since April and May, when it was thought from appearances that much of the wheat would come to naught.

The present outlook for a big corn crop is not at all flattering. The month, however, has been very favorable for the growth of corn, and many fields are showing quite well, but there is a vast amount that is very small for this season of the year and that must have favorable weather to push it up. Corn was unusually late in being planted owing to wet and cold weather during the plowing and planting seasons. A great deal that was put in rotted in the ground and had to be replanted. These conditions have made the crop very uneven over the state and will affect the final result to a greater or less degree. A crop to compare with last year's unusually big crop cannot be expected or hoped for, even under the most favorable conditions, besides the acreage is not nearly so large. The result in bushels will certainly be several millions less than last year's production. The white grub worm is at work in the corn, which coupled with other unfavorable prospects, is not encouraging. Some correspondents report that these worms have taken whole fields. The white grub is also working in some of the oats and damage to the crop will result from this source, but it may not be serious.

But few meadows are free from weeds. Clean timothy hay will be the exception rather than the rule for the present crop.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND CONDITION OF LIVE STOCK, JULY 1, 1897.

Counties.	Wheat.		Barley.	Rye.	Oats.
	Condition compared with an average.	Area plowed up	Condition compared with an average.	Area plowed up	Condition compared with an average.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Adams	89	2	....	2	83
Allen	65	5	90	0	84
Ashland	92	1	100	0	88
Ashtabula	98	0	....	3	73
Athens	92	0	....	0	76
Auglaize	65	5	67	10	74
Belmont	99	0	....	0	78
Brown	84	0	....	2	66
Butler	91	1	98	2	67
Carroll	96	0	....	0	87
Champaign	80	2	90	1	87
Clark	78	5	....	1	87
Clermont	95	1	93	1	67
Clinton	87	2	92	3	83
Columbiana	95	0	100	3	91
Coshocton	92	1	....	0	66
Crawford	82	0	....	0	75
Cuyahoga	91	1	....	9	76
Darke	70	4	78	1	86
Defiance	55	10	70	3	70
Delaware	85	3	85	2	77
Erie	96	2	80	0	78
Fairfield	89	1	....	0	62
Fayette	96	0	....	0	66
Franklin	83	2	....	1	82
Fulton	80	4	90	2	78
Gallia	90	1	....	0	85
Geauga	98	0	90	0	72
Greene	80	3	90	0	90
Guernsey	100	0	....	0	95
Hamilton	80	1	....	0	65
Hancock	81	2	95	0	90
Hardin	73	2	70	2	66
Harrison	90	0	90	0	86
Henry	60	10	100	0	90
Highland	80	1	75	0	70
Hocking	92	0	....	0	76
Holmes	89	1	82	0	75
Huron	91	2	75	2	80
Jackson	85	0	....	0	87
Jefferson	99	1	85	0	92
Knox	91	1	100	0	76
Lake	93	0	....	0	72
Lawrence	101	0	95	0	90
Licking	90	1	....	1	78
Logan	70	5	77	1	86
Lorain	99	0	82	0	88
Lucas	84	5	70	1	87
Madison	88	2	....	0	78
Mahoning	96	0	....	0	88
Marion	85	1	....	0	68
Medina	96	0	....	0	87
Meigs	100	0	95	0	90
Mercer	70	3	....	1	88
Miami	83	2	75	0	84
Monroe	79	0	....	0	75
Montgomery	83	2	75	0	90
Morgan	91	0	85	0	81
Morrow	89	3	....	0	79
Muskingum	98	0	....	0	63
Noble	93	1	....	0	83
Ottawa	85	0	92	0	85
Paulding	40	15	100	2	84
Perry	87	0	....	0	78
Pickaway	86	1	....	5	72
Pike	76	1	100	0	66
Portage	94	0	....	1	79

Official Report of the Ohio Department of Agriculture on the Acreage and Condition of Crops and condition of Live Stock, July 1, 1897—Continued.

Counties.	Wheat.		Barley.	Rye.	Oats.
	Condition compared with an average.	Area plowed up	Condition compared with an average.	Area plowed up.	Condition compared with an average.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Preble	80	5	93	4	93
Putnam	80	6	....	5	90
Richland	83	0	100	0	82
Ross	98	0	....	1	90
Sandusky	79	4	85	0	82
Scioto	98	1	80	3	72
Seneca	82	2	....	3	88
Shelby	65	5	70	3	85
Stark	83	1	....	1	84
Summit	94	0	....	0	84
Trumbull	91	0	....	0	87
Tuscarawas	93	1	90	0	86
Union	85	2	....	0	84
Van Wert	57	10	85	0	77
Vinton	96	0	....	0	74
Warren	84	1	81	1	80
Washington	91	1	....	1	81
Wayne	84	1	75	0	80
Williams	62	10	100	0	90
Wood	82	10	95	0	86
Wyandot	93	0	100	0	85
Average per cent	86	2	87	1	81
Totals	....	....	....	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND CONDITION OF LIVE STOCK, JULY 1, 1897.

Counties.	Corn.					
	Area planted in 1896.	Area planted this year, compared with 1896.	Estimated area planted this year.	Condition compared with an average.	Damage by cut worm.	Damage by white grub worm.
	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.
Adams	32,946	98	32 287	77	2	1
Allen	33,393	92	30 722	72	4	1
Ashland	25,665	93	24,382	69	6	4
Ashtabula	9,326	92	8,580	64	4	2
Athens	16,976	90	15,278	71	5	3
Auglaize	36,424	94	34,239	69	7	0
Belmont	27,062	95	25 709	78	3	1
Brown	45.874	99	45,415	86	5	6
Butler	60,370	94	56,748	74	2	2
Carroll	14,249	91	12,967	62	4	15
Champaign	56,066	95	53,263	71	3	3
Clark	50,546	91	45,997	79	4	3
Clermont	35,372	97	34,312	71	5	6
Clinton	53.667	92	49,374	71	6	5
Columbiana	18,298	95	17,383	74	7	11
Coshocton	24,187	94	22,736	62	4	20
Crawford	35,419	97	34,356	72	2	0
Cuyahoga	10,074	95	9 570	71	2	1
Darke	77.285	97	74 966	74	2	2
Defiance	23.790	92	21,887	75	2	0
Delaware	35,340	92	32.513	65	3	1
Erie	17,208	94	16 176	74	2	0
Fairfield	49,304	92	45,360	67	3	9
Fayette	55,779	102	56,895	84	1	8
Franklin	63,781	93	59,316	75	5	6
Fulton	27,004	94	25,384	76	4	1
Gallia	23,110	95	21,955	82	5	8
Geauga	8,016	95	7,615	61	4	3
Greene	60,049	94	56.446	80	0	3
Guernsey	1,722	100	1,722	72	8	10
Hamilton	16,560	96	15,898	70	1	1
Hancock	51,257	94	48,182	75	7	0
Hardin	36,343	96	34,889	62	7	1
Harrison	14,361	92	13,212	75	8	5
Henry	41,753	100	41,753	79	4	1
Highland	47,448	93	44.128	68	5	9
Hocking	14,709	93	13.679	71	5	3
Holmes	23.815	97	23.101	72	1	8
Huron	26,561	93	24,702	66	5	1
Jackson	12.752	94	11,987	68	8	5
Jefferson	13,731	98	13,456	79	9	3
Knox	31,758	97	30,805	66	3	10
Lake	3,144	90	2,830	72	1	0
Lawrence	21,326	96	20,473	76	2	7
Licking	51,901	93	48,268	69	5	10
Logan	38.950	92	35,834	58	5	3
Lorain	13,610	92	12,521	67	1	0
Lucas	18.297	100	18,297	64	4	1
Madison	82,796	94	77,828	82	6	2
Mahoning	16,943	93	15.757	72	3	4
Marion	38.718	94	36 595	70	7	4
Medina	19 537	96	18,756	75	1	1
Meigs	16,554	90	14,905	70	9	10
Mercer	51,365	100	51,365	68	2	1
Miami	50,534	98	49,523	73	7	7
Monroe	16 836	94	15.826	75	5	5
Montgomery	49,151	100	49,151	85	0	5
Morgan	16,857	93	15,677	69	6	15
Morrow	25,325	94	23,806	67	7	5
Muskingum	29,135	102	29,718	67	3	10
Noble	16,793	93	15.616	68	10	10
Ottawa	15.603	95	14,823	65	2	0
Paulding	29,649	95	28.167	66	5	0
Perry	33,235	97	32,238	62	3	10
Pickaway	74.111	96	71.146	80	6	3
Pike	19,311	92	17 766	59	1	10
Portage	15 173	91	14,262	70	4	3

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND CONDITION OF LIVE STOCK, JULY 1, 1897—Continued.

Counties	Corn.					
	Area planted in 1896.	Area planted this year compared with 1896.	Estimated area planted this year.	Condition compared with an average	Damage by cut worm.	Damage by white grub worm.
	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.
Preble	51,460	100	51,460	79	1	2
Putnam	50,678	99	50,171	76	10	2
Richland	28,672	97	27,768	57	5	2
Ross	66,349	94	62,368	76	1	6
Sandusky	35,080	93	32,624	68	5	0
Scioto	20,178	93	18,766	75	5	4
Seneca	43,550	91	39,631	73	2	1
Shelby	41,394	94	38,910	66	4	1
Stark	28,174	95	26,765	55	2	4
Summit	17,045	92	15,681	63	3	3
Trumbull	13,088	92	12,041	64	9	1
Tuscarawas	21,634	102	22,067	61	1	10
Union	57,596	93	53,564	72	6	1
Van Wert	43,974	95	41 775	75	3	2
Vinton	13,009	97	12,619	7[illegible]	2	10
Warren	58 993	92	54,273	77	3	4
Washington	23,313	98	22,836	74	1	10
Wayne	36,565	94	34,371	67	7	4
Williams	25,153	95	22,765	72	2	2
Wood	73,150	93	68,029	77	4	1
Wyandot	31,556	92	29,021	78	2	0
Totals	2,904,815	96	2,750,039	71	4	5

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND CONDITION OF LIVE STOCK, JULY 1, 1897.—Con.

Counties.	Clover.			Potatoes.			
	Damage by white grub worm.	Product per acre.	Quality compared with an average.	Average planted in 1896.	Area planted this year compared with 1896.	Estimated area planted this year.	Condition compared with an average.
	Per cent.	Tons.	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Adams	1	125	92	234	94	218	80
Allen	0	195	93	942	86	809	86
Ashland	6	175	85	1,204	89	1,072	81
Ashtabula	0	165	93	3,188	89	3,156	82
Athens	1	175	100	1,025	91	933	78
Auglaize	1	140	84	1,153	91	1,049	65
Belmont	1	190	100	1,723	96	1,654	96
Brown	0	210	98	990	93	920	70
Butler	2	169	88	1,737	88	1,507	76
Carroll	5	150	88	567	90	510	77
Champaign	0	175	90	1,135	96	1,090	92
Clark	0	178	90	1,542	91	1,403	80
Clermont	1	145	85	1 742	94	1,637	69
Clinton	1	195	97	3,237	90	2,913	70
Columbiana	3	150	93	1,804	89	1,605	85
Coshocton	2	172	92	1,240	92	1,141	70
Crawford	0	145	93	1,177	89	1 048	75
Cuyahoga	2	146	86	5 846	89	5,192	79
Darke	0	220	97	2,523	92	2,321	82
Defiance	7	200	93	1,043	92	954	80
Delaware	2	196	98	947	85	804	76
Erie	0	171	94	2,897	90	2,607	75
Fairfield	2	150	84	1,612	90	1,451	71
Fayette	0	200	105	199	95	189	75
Franklin	0	205	92	3,735	90	3,362	72
Fulton	1	164	94	1,400	89	1 246	87
Gallia	1	100	90	556	90	500	80
Geauga	2	150	90	2,035	92	1,872	85
Greene	0	175	79	1,002	92	922	92
Guernsey	0	125	80	595	105	623	95
Hamilton	0	150	85	5,498	98	5,388	77
Hancock	4	135	93	1,391	94	1,308	79
Hardin	0	175	92	2,734	93	2,543	74
Harrison	1	150	94	384	90	346	88
Henry	0	175	99	1,221	90	1,099	102
Highland	2	139	91	337	90	294	62
Hocking	1	175	100	761	93	707	78
Holmes	5	180	96	944	92	869	79
Huron	2	175	93	1,498	96	1,438	79
Jackson	2	200	93	174	95	165	80
Jefferson	1	165	91	1 996	90	1,796	90
Knox	0	155	92	781	90	703	90
Lake	0	150	100	831	95	789	72
Lawrence	1	212	85	466	91	424	81
Licking	6	148	90	1 622	91	1,476	78
Logan	1	172	91	767	85	652	79
Lorain	1	180	97	1 708	90	1,537	77
Lucas	0	208	102	3,438	93	3,197	89
Madison	1	200	98	436	100	436	83
Mahoning	0	168	86	3,220	93	2 994	92
Marion	0	167	95	1,308	91	1,190	74
Medina	0	169	93	1,711	90	1,540	77
Meigs	5	167	93	1,338	91	1,218	85
Mercer	0	200	88	867	93	806	90
Miami	0	175	95	2,167	90	1,950	84
Monroe	3	100	88	1,304	100	1,304	75
Montgomery	0	225	90	1,757	93	1,634	75
Morgan	7	184	91	711	95	675	83
Morrow	0	157	89	1,445	95	1,373	81
Muskingum	4	133	80	1,534	96	1,444	75
Noble	2	200	97	757	93	719	95
Ottawa	0	200	106	684	95	650	100
Paulding	1	188	95	678	93	631	77
Perry	0	175	96	759	92	698	76
Pickaway	2	145	97	1,042	96	1 000	71
Pike	9	200	91	500	100	500	55
Portage	2	153	89	5,151	96	4,945	90

Official Report of the Ohio Department of Agriculture on the Acreage and Condition of Crops and Condition of Live Stock, July 1, 1897.—Con.

Counties.	Clover.			Potatoes.			
	Damage by white grub worm.	Product per acre.	Quality compared with an average	Average planted in 1896.	Area planted this year compared with 1896.	Estimated area planted this year.	Condition compared with an average.
	Per cent.	Tons.	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Preble	1	181	90	699	90	629	92
Putnam	2	194	95	3,164	92	2,911	66
Richland	0	200	100	1.822	89	1,622	73
Ross	2	200	94	1,674	90	1,507	71
Sandusky	0	162	85	2,126	90	1,913	89
Scioto	8	200	90	1,070	90	963	67
Seneca	0	153	83	1.879	91	1,710	85
Shelby	2	183	93	953	93	886	72
Stark	4	162	85	2,607	90	2,346	67
Summit	0	156	77	2,245	92	2,065	73
Trumbull	0	142	91	2,902	90	2,612	89
Tuscarawas	8	142	94	1,927	95	1 831	74
Union	1	187	96	634	90	571	82
Van Wert	0	166	100	1,001	90	901	68
Vinton	3	162	99	421	90	379	83
Warren	2	178	93	936	90	842	84
Washington	4	172	82	2,646	93	2,461	77
Wayne	5	165	91	2,157	92	1,984	71
Williams	0	200	90	985	100	985	92
Wood	0	194	96	1,424	92	1,310	86
Wyandot	0	166	99	940	90	846	80
Average per cent	2	Tons 1¾	92	....	92	....	76
Totals	....	....	....	137,162	....	125,217	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE AVERAGE AND CONDITION OF CROPS AND CONDITION OF LIVE STOCK JULY 1, 1897—Continued

Counties.	Tobacco	Timothy.	Horses.	Pastures	Colts.	Cattle.	Calves.
	Area compared with last year.	Condition compared with an average.	Condition compared with an average.	Condition compared with an average.	Numbers compared with an average.	Condition compared with an average	Numbers compared with an average.
	Per cent	Per cent.	Per cent.	Per cent	Per cent.	Per cent.	Per cent.
Adams	68	88	96	94	48	90	82
Allen		74	99	104	74	98	85
Ashland		91	98	100	67	98	85
Ashtabula		82	99	93	40	99	100
Athens		80	100	101	80	100	102
Auglaize	70	65	84	94	45	87	78
Belmont	105	83	102	108	56	105	91
Brown	61	77	98	106	49	92	88
Butler	85	90	100	105	56	100	94
Carroll		98	93	99	61	91	88
Champaign	88	82	95	100	50	97	99
Clark		96	97	101	61	98	76
Clermont	79	79	100	104	40	101	92
Clinton	82	91	98	104	62	99	86
Columbiana		78	100	101	81	101	95
Coshocton		69	97	89	59	97	85
Crawford		88	97	105	74	98	90
Cuyahoga		84	96	93	54	96	87
Darke	110	90	96	106	79	102	73
Defiance	70	88	100	97	75	100	88
Delaware		78	99	105	60	101	91
Erie		89	98	102	45	93	90
Fairfield		64	97	86	53	93	90
Fayette		90	95	107	42	97	72
Franklin		73	100	100	58	98	93
Fulton		86	94	107	58	102	105
Gallia	100	60	100	100	50	88	80
Geauga		76	100	94	54	100	99
Greene	88	82	95	102	47	97	79
Guernsey		80	100	110	35	100	100
Hamilton	65	95	100	95	40	100	100
Hancock		91	100	119	70	105	92
Hardin		82	95	109	54	101	92
Harrison		75	99	104	67	96	93
Henry		89	97	108	84	100	99
Highland	80	59	97	92	47	91	76
Hocking		80	100	101	80	100	100
Holmes		85	97	95	41	97	88
Huron		86	91	103	56	95	84
Jackson		100	97	97	65	100	92
Jefferson		88	100	106	50	92	87
Knox		82	101	104	51	102	89
Lake		67	98	92	41	98	90
Lawrence	85	82	100	105	58	99	99
Licking		78	96	99	45	98	80
Logan		83	98	105	57	99	86
Lorain		88	97	101	40	99	82
Lucas		95	102	105	59	106	94
Madison		94	97	104	78	98	92
Mahoning		72	94	105	57	97	92
Marion		80	95	106	57	95	92
Medina		98	97	105	66	100	100
Meigs	98	68	98	105	58	98	91
Mercer		100	100	100	68	100	100
Miami	86	81	100	110	60	103	90
Monroe	90	90	100	88	65	100	75
Montgomery	100	90	100	100	45	100	100
Morgan	70	57	97	104	49	99	86
Morrow		85	96	99	68	95	91
Muskingum	75	64	94	95	58	95	86
Noble	64	80	93	104	42	96	80
Ottawa		92	100	110	75	100	100
Paulding		90	100	105	79	102	100
Perry		59	97	105	40	92	87
Pickaway		95	99	101	62	98	84
Pike	100	72	91	96	35	92	89
Portage		79	98	102	65	98	102

OFFCIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS AND CONDITION OF LIVE STOCK JULY 1, 1897—Concluded.

Counties.	Tobacco	Timothy.	Horses.	Pastures	Colts.	Cattle.	Calves.
	Area compared with last year.	Condition compared with an average.	Condition compared with an average	Condition compared with an average.	Numbers compared with an average.	Condition compared with an average.	Numbers compared with an average.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Preble	110	102	101	110	62	101	99
Putnam	....	85	95	85	71	100	90
Richland	....	95	95	103	40	95	78
Ross	....	84	96	104	46	99	87
Sandusky	....	90	96	96	40	94	75
Scioto	....	77	89	97	32	93	82
Seneca	....	76	93	98	70	94	88
Shelby	90	76	97	110	35	100	78
Stark	....	86	90	88	47	91	99
Summit	....	88	95	96	60	101	99
Trumbull	....	96	95	98	56	100	99
Tuscarawas	....	72	98	96	43	97	100
Union	....	92	97	110	58	96	96
Van Wert	....	95	100	103	60	93	67
Vinton	....	70	97	99	48	99	90
Warren	106	86	99	101	65	101	90
Washington	100	64	98	98	41	98	94
Wayne	100	90	97	96	57	91	82
Williams	....	100	97	110	45	100	40
Wood	....	86	99	102	66	97	81
Wyandot	....	97	99	102	80	99	97
Totals	84	82	97	100	56	98	89

ACREAGE, PRODUCT AND CONDITION OF CROPS.

OCTOBER 1, 1897.

The following report represents condition of crops as carefully estimated from the returns of the regular township correspondents of the Department, received for October 1, 1897. For product of wheat, oats, barley and rye, the estimates are based on reports of actual threshing, which is the best index possible upon which to figure yield per acre by counties and the total yield for the state. Condition or prospect of other items in report are by comparison with a fair average condition or prospect.

WHEAT—	Estimated area	2,161,295 acres.
“	Average product per acre	17.67 bushels.
“	Total estimated product for 1897	38,194,086 bushels.
“	Quality compared with an average	98 per cent.
“	Crop of 1896 still in producers' hands	10 per cent.
OATS—	Estimated area	878,270 acres.
“	Estimated product per acre	31.17 bushels.
“	Total estimated product for 1897	27,373,399 bushels.
“	Quality compared with an average	85 per cent.
BARLEY--	Estimated area	13,925 acres.
“	Estimated product per acre	27.58 bushels.
“	Total estimated product for 1897	384,028 bushels.
“	Quality compared with an average	93 per cent.
RYE—	Estimated area	35,675 acres.
“	Estimated product per acre	18 bushels.
“	Total estimated product for 1897	642,004 bushels.
CORN—	Prospect compared with an average	79 per cent.
POTATOES—	Probable total compared with an average	41 per cent.
TOBACCO—	Condition compared with an average	78 per cent.
PASTURES—	Condition compared with an average	67 per cent.
TIMOTHY HAY—	Average yield per acre	1.50 tons.
“	Quality compared with an average	84 per cent.
HOGS—	Condition compared with an average	95 per cent.
“	Herds attacked by disease	2 per cent.
“	Lost by disease since May	1 per cent.

The result of threshing indicates that wheat condition as reported from month to month by percentage comparison, was not estimated too high. The crop has been a good yield throughout the state and as a total is about double the crop of last year and about 12,000,000 bushels in excess of the crop of 1895, in both of which years there was a shortage. The wheat crop of 1894 was considerably in excess of a full average one for the state, in fact was the largest ever produced in the state. The crop of 1897 is below that immense crop something more than 12,000,000 bushels.

The following figures relative to wheat production for the years referred to are of interest for comparison at this time:

1894—2,515,566 acres; 50,852,433 bushels; average per acre 20 bushels.
1895—2,225,534 acres; 26,520,930 bushels; average per acre 11.9 bushels.
1896—2,011,708 acres; 17,269,545 bushels; average per acre 8.53 bushels.
1897—2,161,295 acres; 38,194,086 bushels; average per acre 17.67 bushels.

About the entire area seeded last fall stood for the harvest, there being no occasion for any notable plowing up this spring. Correspondents in some sections of the state report that owing to excessive rains during harvest, quite a quantity of wheat sprouted in the shock, thus affecting the quality to a certain extent.

The month of September has been for the most part extremely hot and dry. About the 20th frosts occurred and these conditions have had a bad effect upon the corn, which was prematured and will result in a great quantity which will be unmerchantable. Fodder was badly fired and its value reduced from 25 per cent. to 50 per cent.

Potatoes will not be a full crop, many sections report almost a total failure; the product ranging from as low as 12 per cent. to as high as 90 per cent. in different parts of the state.

Pastures have dried up and in many localities water is becoming scarce.

The dry month of September will have a very perceptible effect on the wheat area for 1898. Farmers have been unable to seed, or have delayed, waiting for rain and the result will be that a large area intended for wheat will not be sown. A great deal of the wheat seeded has not germinated and if rain does not bring it out there will be another loss of area from this cause. Altogether the wheat prospect for next year is far from flattering or even promising. A very short area is certain.

The apple crop in Ohio is very unevenly distributed and for the entire state will not result in more than one-fourth of a crop as compared with a fair average.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1ST, 1897.

Counties.	Wheat.					Oats.			
	Estimated area.	Product per acre.	Total product for 1897, bushels.	Quality compared with an average.	Crop of 1896 still in producers' hands.	Estimated area.	Product per acre.	Total product for 1897, bushels.	Quality compared with an average.
Adams	16,550	12	198,600	96	31	1,848	20	36,960	83
Allen	23,858	12	286,296	96	12	8,473	33	279,609	91
Ashland	31,901	21	669,921	100	5	17,776	32	568,832	82
Ashtabula	11,575	20	231,500	90	8	14,732	26	383,032	83
Athens	7,582	14	107,148	98	30	1,482	20	29,640	90
Auglaize	28,530	13	370,890	86	8	8,934	36	321,624	78
Belmont	21,914	19	416,366	100	20	10,554	27	284,958	73
Brown	25,431	18	457.758	103	2	3,781	33	124,773	64
Butler	42,748	16	683.968	100	19	7,201	27	194,427	62
Carroll	16.832	19	319,708	100	10	13,643	29	395.647	73
Champaign	45,157	17	767.669	103	2	6,502	32	208,064	100
Clark	30.130	16	482,080	99	2	4.531	38	172.178	87
Clermont	20,353	16	325,648	100	18	6,238	26	162,188	80
Clinton	32,898	15	493,470	98	2	3,490	26	90,740	84
Columbiana	18,317	20	366.340	103	4	12,095	29	350,755	93
Coshocton	21,259	18	382.662	101	2	7,571	22	166,562	88
Crawford	25.146	20	502.920	98	1	17,742	35	620,970	80
Cuyahoga	9.147	24	219,528	98	14	12.183	34	414.222	80
Darke	57,679	13	749.827	97	5	16,325	33	538,725	94
Defiance	25.935	16	414.960	98	1	18.689	34	635.426	96
Delaware	17.299	14	242.186	102	9	7,080	28	198,240	96
Erie	14,531	24	348.744	79	8	12,135	31	376.185	90
Fairfield	31,863	19	605,397	96	7	3,448	25	86.200	76
Fayette	24,442	19	464,398	100	5	1,057	25	26.425	88
Franklin	29,718	19	564.642	98	15	5,389	29	156,281	88
Fulton	35,006	19	665,114	93	11	14,900	37	551,300	83
Gallia	14,191	14	198.674	103	2	2,650	22	58.300	85
Geauga	5,720	22	125,840	98	1	11.010	32	353,280	91
Greene	35,906	16	574,496	98	14	4,125	35	144,375	84
Guernsey	14.072	15	211.080	100	25	6,780	20	135,600	85
Hamilton	15,113	19	287,147	100	2	4,077	30	122,310	85
Hancock	43,457	18	782.226	88	1	11.833	33	390.489	89
Hardin	29,800	14	417,200	100	6	14,853	30	445,590	93
Harrison	10.449	20	208,980	100	6	6,868	33	226,644	95
Henry	30.849	16	493,584	100	3	7,708	30	231,240	93
Highland	32.481	16	519.696	97	16	1,663	28	46,464	77
Hocking	10,610	18	190,980	100	12	2,419	25	60,475	95
Holmes	36,338	18	654,084	98	2	14.039	25	350,975	92
Huron	26,260	22	577,720	101	14	25,333	33	835.989	87
Jackson	7,231	13	94.003	94	17	1,363	21	28.623	89
Jefferson	19,405	21	407.505	102	2	11,703	30	351,090	80
Knox	29.992	19	569,848	104	1	11,017	27	297,459	84
Lake	3.877	22	85.294	98	30	5,251	29	152,279	87
Lawrence	7.767	12	93,204	98	37	3,357	24	80,568	85
Licking	32,594	16	521,504	99	4	8.745	26	227,370	91
Logan	24,226	12	290.712	94	12	6.458	26	167.908	85
Lorain	15,446	22	339,812	101	17	19.050	33	628,650	87
Lucas	16,221	25	405.525	99	14	10.355	35	362,425	88
Madison	22,671	18	408.075	102	1	2.731	34	92,854	90
Mahoning	12.153	24	291,672	91	12	16.015	32	512,480	80
Marion	23,194	16	371,134	95	3	11.245	36	404,820	85
Medina	17.942	21	376.782	100	2	18,572	33	612.876	90
Meigs	12,529	16	200,464	95	21	1,920	30	57.600	90
Mercer	35,699	13	464,087	95	1	12,285	30	368.550	97
Miami	39,880	18	717.840	98	12	12,750	37	471.750	94
Monroe	19.283	17	327,811	100	20	8,324	30	249.720	99
Montgomery	37,084	17	630,428	95	18	10,517	30	315.510	80
Morgan	9,187	15	137,805	100	5	1,278	20	25,560	56
Morrow	14.489	19	275,291	98	14	12,755	27	344,385	81
Muskingum	21,454	17	364.718	101	12	6.660	20	133,200	85
Noble	13.766	17	234,022	101	13	5,108	26	132,808	75
Ottawa	16,239	23	373,497	100	6	7,592	41	311,272	94
Paulding	15,758	10	157,580	87	5	7,011	31	217,341	86
Perry	13,140	19	249,660	97	0	3,841	28	107,548	78
Pickaway	45,592	18	820,656	99	12	1,304	34	44,336	82
Pike	13,641	16	218,256	93	0	3,717	17	63,189	78
Portage	19,460	24	467,010	99	1	18,405	34	625,770	88

Official Report of the Ohio Department of Agriculture on the Acreage, Product and Condition of Crops, October 1st, 1897.

Counties.	Wheat					Oats.			
	Estimated area.	Product per acre.	Total product for 1897, bushels	Quality compared with an average.	Crop of 1896 still in producers' hands.	Estimated area.	Product per acre.	Total product for 1897, bushels.	Quality compared with an average
Preble	40.556	16	648,896	102	2	11,702	29	359,358	91
Putnam	28,854	16	461,664	97	2	3,639	34	123,726	81
Richland	38,261	18	688,698	92	10	24,828	30	744,840	72
Ross	37,575	19	713,925	103	18	2.306	30	69,180	86
Sandusky	32.174	20	643,480	98	9	12.936	35	452.760	87
Scioto	12.788	21	268,548	97	35	3,757	32	120,224	77
Seneca	48,543	19	922.317	100	13	19,307	34	656,438	86
Shelby	32,552	19	618.488	99	1	17,000	27	459,000	85
Stark	36.849	19	700.131	95	1	25,694	30	770,820	87
Summit	22,468	24	539,232	99	2	15,468	33	510.444	87
Trumbull	9,968	24	239.132	90	18	15,880	26	412,880	75
Tuscarawas	26,868	22	591.096	100	2	18,433	28	516,124	77
Union	21.695	17	368.815	96	11	6,411	31	198,741	92
Van Wert	28.055	10	280,550	100	2	11,500	30	345 000	81
Vinton	6,688	14	93.632	97	3	1.439	22	31,658	67
Warren	34,539	15	518.085	99	4	6,223	28	174,244	81
Washington	29.142	16	466,272	96	17	7.966	24	191,184	93
Wayne	43.310	18	779,580	98	10	24.607	38	935,066	91
Williams	31.297	18	563.346	96	3	22.943	35	803.005	94
Wood	47,629	24	1.143.096	96	16	25.323	40	1,012,920	88
Wyandot	20,497	23	471.431	100	9	10.392	31	322,152	88
Average per cent	....	17.67 bush.	....	98	10	....	31.17 bush.	....	85
Totals	2.161,295	....	38,194.086	....	....	878,270	....	27,373.399	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1897—Continued.

Counties	Barley.				Rye.		
	Estimated area.	Product per acre.	Total product for 1897, bushels.	Quality compared with an average.	Estimated area.	Product per acre.	Total product for 1897, bushels.
Adams	9	20	180	90	227	15	3,405
Allen	14	27	378	90	309	19	5,871
Ashland	139	28	3,892	95	130	17	2,210
Ashtabula	542	20	10,840	95	355	20	7,100
Athens	15	19	285	90	43	10	430
Auglaize	361	35	12,635	80	306	19	5.814
Belmont	32	26	832	80	146	19	2,774
Brown	20	25	500	90	964	14	13.496
Butler	1,428	34	48,552	90	383	14	5,362
Carroll	29	20	580	90	182	14	2,548
Champaign	10	18	180	80	333	13	4,329
Clark	47	20	940	70	827	20	16.540
Clermont	4	27	108	95	918	15	13.770
Clinton	65	30	1,950	97	151	15	2 265
Columbiana	36	20	720	100	238	19	4.522
Coshocton	2	25	50	96	207	12	2,484
Crawford	176	20	3,520	92	173	18	3,114
Cuyahoga	20	21	420	90	580	18	10.440
Darke	485	26	12,610	90	764	18	13 752
Defiance	217	24	5,208	100	328	18	5.904
Delaware	7	23	161	100	167	13	2.171
Erie	1,157	24	27,768	90	486	19	9,234
Fairfield	17	32	544	80	118	15	1.770
Fayette	27	30	810	90	290	18	5,220
Franklin	23	24	552	90	86	23	1,978
Fulton	325	20	6,500	95	627	18	11,286
Gallia	9	20	180	90	75	18	1.350
Geauga	13	21	273	90	72	20	1,440
Greene	80	25	2.000	75	432	20	8,640
Guernsey	16	25	400	86	372	11	4.092
Hamilton	296	23	6,808	96	846	18	15,228
Hancock	27	21	567	90	846	15	12,690
Hardin	25	24	600	95	497	16	7.952
Harrison	5	20	100	94	60	18	1,080
Henry	144	20	2,880	98	3,098	17	52 666
Highland	10	20	200	80	241	17	4,097
Hocking	11	20	220	90	78	19	1,482
Holmes	86	24	2,064	90	507	14	7,098
Huron	187	20	3,740	87	282	15	2,730
Jackson	2	26	52	95	....	....	....
Jefferson	75	24	1,800	96	36	19	684
Knox	18	22	416	90	306	14	4,284
Lake	163	30	4,890	100	477	18	8,586
Lawrence	10	26	260	91	125	18	2,250
Licking	23	25	575	96	337	16	5,392
Logan	124	30	3,720	90	313	16	5.008
Lorain	366	25	9,150	95	207	22	4,554
Lucas	547	30	16,410	85	1,328	25	33,200
Madison	11	30	330	100	354	20	7,080
Mahoning	31	24	744	100	327	20	6,540
Marion	62	25	1,550	98	208	20	4,160
Medina	32	24	768	95	50	21	1,050
Meigs	48	28	1.344	97	32	17	544
Mercer	473	26	12,298	96	709	15	10,635
Miami	449	33	14 817	88	178	23	4 094
Monroe	2	30	60	95	226	19	4,294
Montgomery	545	26	14,170	90	464	14	6.496
Morgan	....	....	....	....	82	16	992
Morrow	16	22	352	95	615	17	10.455
Muskingum	25	24	600	96	1,383	15	20,745
Noble	15	18	270	100	69	20	1,380
Ottawa	1,539	35	53.865	85	380	20	7,600
Paulding	31	35	1,085	63	788	16	12.608
Perry	8	30	240	90	148	19	2.812
Pickaway	10	28	280	90	123	24	2,952
Pike	136	25	3.400	89	2	12	24
Portage	91	24	2,184	95	159	18	2,862

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1897—Continued.

Counties.	Barley.				Rye.		
	Estimated area.	Product per acre.	Total product for 1897, bushels.	Quality compared with an average.	Estimated area.	Product per acre.	Total product for 1897 bushels.
Preble	168	35	5,880	100	322	17	5,474
Putnam	81	29	2,349	90	955	18	17,190
Richland	179	26	4,6[illegible]4	95	559	18	10,062
Ross	23	25	575	95	197	18	3,546
Sandusky	328	32	10,496	80	617	22	13,574
Scioto	22	20	440	96	80	20	1,600
Seneca	62	23	1,426	96	411	25	10.275
Shelby	498	14	6 972	88	288	15	4,320
Stark	71	20	1 420	89	196	15	2,940
Summit	18	20	360	90	139	14	1,946
Trumbull	18	26	468	96	129	21	2 709
Tuscarawas	37	24	888	100	179	19	3,401
Union	5	30	150	100	428	20	8.560
Van Wert	180	22	3,960	75	2.085	25	52,125
Vinton	2	30	60	100	90	14	1,260
Warren	485	35	16,975	98	440	10	4,400
Washington	5	30	150	100	155	10	1,550
Wayne	48	35	1,680	88	139	27	3.753
Williams	108	22	2,376	90	242	18	4 356
Wood	606	26	15,756	87	1,494	22	32.868
Wyandot	28	22	616	100	360	18	6,480
Average per cent	....	27.58 bush.	....	93	....	18 bush.	....
Totals	13,925	....	384.028	....	35.675	....	642 004

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1897—Continued.

Counties.	Corn.	Potatoes	Tobacco	Pastures.	Timothy hay		Hogs.		
	Prospect compared with an average.	Probable total compared with an average.	Condition compared with an average.	Condition compared with an average.	Average yield per acre, tons.	Quality compared with an average	Condition compared with an average	Herds attacked by disease	Loss by disease since May.
Adams	71	46	82	62	1.11	84	93	0	0
Allen	81	12	....	51	1.54	81	96	1	1
Ashland	84	50	....	69	1.61	80	98	1	0
Ashtabula	70	56	90	94	1.11	87	99	0	0
Athens	89	44	....	71	1.46	73	100	0	0
Auglaize	74	25	60	44	1.65	72	93	6	4
Belmont	71	42	88	55	1.50	89	98	0	1
Brown	90	36	47	76	1.43	88	97	1	1
Butler	80	34	....	80	1.56	88	93	1	0
Carroll	62	44	....	59	1.50	74	91	0	0
Champaign	100	19	....	92	1.67	100	97	0	1
Clark	75	25	....	65	1.54	94	100	2	1
Clermont	91	34	62	84	1.12	80	97	1	1
Clinton	89	38	72	83	1.70	84	93	5	5
Columbiana	75	58	....	87	1.37	88	98	0	0
Coshocton	76	38	....	63	1.30	88	97	1	1
Crawford	72	27	....	72	1.65	85	92	0	1
Cuyahoga	71	72	....	69	1.36	85	94	0	0
Darke	85	17	87	73	1.65	96	95	2	2
Defiance	81	49	80	55	1.14	93	100	0	0
Delaware	66	25	....	71	1.62	77	88	2	1
Erie	82	58	60	64	1.69	89	94	0	0
Fairfield	75	32	50	62	1.25	72	95	3	4
Fayette	86	29	....	78	1.66	89	93	7	3
Franklin	80	31	....	58	1.44	70	91	4	5
Fulton	91	51	....	50	1.48	86	102	0	0
Gallia	60	43	90	80	1.19	88	96	1	1
Geauga	84	56	....	78	1.56	86	99	0	0
Greene	78	35	93	42	1.50	72	100	7	4
Guernsey	75	50	....	70	1.25	80	97	1	1
Hamilton	100	35	100	48	1.50	91	100	0	0
Hancock	86	30	....	78	1.68	96	97	3	2
Hardin	85	25	....	56	1.45	87	99	1	1
Harrison	66	49	....	73	1.65	84	93	0	0
Henry	88	35	....	40	1.58	98	95	2	1
Highland	75	41	72	70	1.20	73	56	2	2
Hocking	90	50	....	85	1.00	67	100	1	0
Holmes	66	45	82	70	1.46	89	97	0	1
Huron	78	45	....	63	1.62	80	99	0	0
Jackson	77	46	100	71	1.33	86	94	6	4
Jefferson	82	45	....	75	1.63	89	100	0	1
Knox	77	37	100	86	1.67	83	97	0	0
Lake	88	83	....	72	1.33	94	98	0	0
Lawrence	93	25	100	45	1.29	93	98	1	1
Licking	73	40	....	72	1.31	86	92	0	0
Logan	80	24	....	73	1.52	85	93	2	1
Lorain	82	58	....	41	1.42	88	99	0	0
Lucas	80	52	....	43	1.64	98	99	1	1
Madison	73	39	....	71	1.59	94	94	4	3
Mahoning	68	58	....	84	1.25	86	93	1	1
Marion	78	26	....	69	1.62	84	90	6	4
Medina	79	57	40	73	1.56	80	100	0	0
Meigs	70	45	95	58	1.35	75	96	2	1
Mercer	82	24	95	72	1.33	65	95	1	1
Miami	86	20	91	84	1.57	91	94	1	0
Monroe	70	73	73	83	1.18	88	94	0	1
Montgomery	83	35	93	50	1.50	87	90	2	3
Morgan	79	48	63	86	1.33	75	97	0	0
Morrow	77	37	....	61	1.52	81	100	0	0
Muskingum	73	38	75	66	1.18	71	93	0	0
Noble	87	66	88	88	1.75	82	95	2	2
Ottawa	93	45	....	61	1.70	95	100	2	2
Paulding	79	27	50	64	1.50	91	94	0	0
Perry	82	40	....	75	1.25	70	95	1	0
Pickaway	88	32	....	80	1.47	81	84	9	12
Pike	80	28	85	68	1.00	77	80	3	3
Portage	73	69	....	80	1.64	88	99	0	0

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, PRODUCT AND CONDITION OF CROPS, OCTOBER 1, 1897—Concluded.

Counties.	Corn.	Potatoes.	Tobacco.	Pastures.	Timothy hay.		Hogs.		
	Prospect compared with an average.	Probable total compared with an average.	Condition compared with an average.	Condition compared with an average	Average yield per acre, tons.	Quality compared with an average.	Condition compared with an average.	Herds attacked by disease	Loss by disease since May
Preble	91	40	97	91	1.61	92	98	4	2
Putnam	89	29	....	58	1.38	88	87	10	6
Richland	72	20	....	35	1.58	81	97	2	3
Ross	78	29	80	55	1.47	85	88	9	3
Sandusky	80	45	....	37	1.50	88	94	3	2
Scioto	85	38	65	62	1.20	81	75	2	2
Seneca	81	36	....	44	1.52	78	93	1	1
Shelby	71	45	82	56	1.55	73	99	0	0
Stark	92	47	....	74	1.72	88	92	0	0
Summit	65	59	....	65	1.47	84	94	1	1
Trumbull	52	49	....	95	1 53	88	96	0	1
Tuscarawas	79	46	....	69	1.33	71	99	0	0
Union	82	27	....	81	1.50	86	96	2	2
Van Wert	80	36	....	83	1.36	89	95	4	3
Vinton	78	46	....	75	1.29	81	100	1	1
Warren	91	41	87	81	1 28	72	98	1	0
Washington	95	41	60	74	1.47	80	100	0	0
Wayne	84	55	90	76	1.71	82	96	0	0
Williams	90	49	80	70	1 43	100	100	1	1
Wood	81	29	....	43	1.50	98	100	2	1
Wyandot	81	45	....	52	1.55	75	99	2	3
Average per cent	79	41	78	67	1½ tons	84	95	2	1

ACREAGE AND CONDITION OF CROPS,

NOVEMBER 1, 1897.

The following estimates are deduced from the monthly reports of the regular township crop correspondents of the Department, every county and nearly every township in the State being represented in the returns. For acreage comparison is made with the area seeded last year, condition or prospect is by comparison with a fair average:

WHEAT—Area sown in 1896	2,161,295	acres.
“ Area sown this fall compared with last year	91	per cent.
“ Estimated area sown in 1897	1,974,535	acres.
“ Condition compared with an average	51	per cent.
“ Average date of seeding	Sept. 29	
“ Condition of soil at time of seeding	Generally bad.	
BARLEY—Area sown in 1896	13,925	acres.
“ Area sown this year compared with last year	89	per cent.
“ Total estimated area in 1896	11,910	acres.
“ Condition compared with an average	62	per cent.
RYE—Area sown in 1896	35,675	acres.
“ Sown this fall compared with last year	80	per cent.
“ Estimated area sown in 1896	28,547	acres.
CORN—Prospect compared with an average	79	per cent.
BUCKWHEAT—Prospect compared with an average	72	per cent.
CLOVER SEED—Prospect compared with an average	112	per cent.
POTATOES—Area planted in 1897	125,217	acres.
“ Average product per acre	47	bushels.
“ Total estimated product	5,944,939	bushels.
“ Affected by rot	3	per cent.
APPLES—Product compared with an average	23	per cent.
HOGS—Condition compared with an average	95	per cent.
“ Number to be fattened compared with 1896	91	per cent.
COMMERCIAL FERTILIZERS—Farmers using on wheat	41	per cent.

As predicted in the report of October 1, the wheat area has been cut short by the drouth that prevailed during September and that continued unbroken until the first of November. Owing to the unfavorable weather conditions many farmers were compelled to delay seeding and some concluded not to seed fields that were intended for wheat. A great portion of the wheat that was seeded has not made its appearance, there having been insufficient moisture in the ground to germinate the seed. Wheat that is up, even fields that are well covered, shows a weak thin plant that will readily succumb to frosts, and unless favorable weather prevails to strengthen the plant, it will go into winter in poor condition and much may have to be plowed up in the spring.

The wheat area is already very short. The estimate shows but 91 per cent of the area seeded last fall for the harvest of 1897. The shortage represents 194,516 acres, which upon the basis of last year's production would affect the harvest of 1898 to the extent of about three and one-half millions of bushels.

Wheat areas for the past five years have been in

1894	2,515,566 acres.
1895	2,225,534 acres.
1896	2,011,708 acres.
1897	2,161,295 acres.
1898	1,974,535 acres.

November first the drouth was broken, and if the month continues favorable, there will be still some fields seeded to wheat and fields reseeded where the wheat has not germinated, but the amount will not be great.

Corn husking progressed slowly owing to the very dry condition of the fodder. In many localities the corn is not husking out so well as was anticipated and the grain is loose on the cob.

Clover seed is compared with an average product and not with the product of a year or two past. It shows an abundant crop. In some sections of the State, very large compared with a good average, and as compared with the last two years double and even more.

Pastures are about dried up and farmers have been feeding stock for some time past.

The potato crop is a very light one for the State, averaging but 47 bushels per acre against 93 bushels per acre last year, with a total product of 5,944,939 bushels against 12,852,147 bushels last year, besides 3 per cent. is estimated to be affected by rot.

Apples show only about one-fourth of a fair average product, and very unevenly distributed.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1897.

Counties.	Wheat.					
	Area sown in 1896.	Area sown this fall compared with last year.	Estimated area sown in 1897.	Condition compared with an average.	When sown, days after Sept. 1.	Condition of soil at time of seeding.
	Acres.	Per cent.	Acres.	Per cent.		
Adams	16,550	97	16,054	49	37	Bad
Allen	23,858	76	18,132	31	32	"
Ashland	31,901	97	30,944	56	33	"
Ashtabula	11,571	105	12,150	95	14	Fair
Athens	7,582	88	5,132	46	28	"
Auglaize	28,530	82	23,394	37	30	Bad
Belmont	21,914	105	23,010	34	27	"
Brown	25,431	110	27,974	49	26	"
Butler	42,748	90	38,653	64	30	"
Carroll	16,832	95	15,990	55	29	"
Champaign	45.157	105	47,415	62	13	"
Clark	30,130	98	29,527	56	32	"
Clermont	20,353	92	18,725	42	35	Fair
Clinton	32,898	99	32,569	50	37	Bad
Columbiana	18,317	98	17,951	78	25	Fair
Coshocton	21,259	100	21.259	46	25	Bad
Crawford	25,146	80	20,117	66	28	"
Cuyahoga	9,147	110	10,062	67	21	"
Darke	57,679	98	56,525	48	26	"
Defiance	25,935	83	21,526	47	35	"
Delaware	17,299	72	12.455	40	35	Fair
Erie	14,531	90	13,078	49	25	Bad
Fairfield	31,863	96	30.588	49	23	"
Fayette	24,442	95	23,220	40	33	Fair
Franklin	29,718	97	29,026	38	31	Bad
Fulton	35,006	83	29.055	43	26	"
Gallia	14,191	75	10,643	55	35	"
Geauga	5,720	108	6.178	81	13	Good
Greene	35.906	91	32,675	36	31	Bad
Guernsey	14,072	92	12.948	41	25	"
Hamilton	15,113	81	12,242	50	34	"
Hancock	43,457	78	33,896	59	33	"
Hardin	29,800	96	28,608	54	43	"
Harrison	10.449	99	10,345	36	22	"
Henry	30 849	85	26.222	39	25	"
Highland	32.481	99	32,156	42	37	"
Hocking	10.610	90	9,549	32	29	"
Holmes	36.338	103	37.428	63	24	"
Huron	26 260	91	23,897	45	31	"
Jackson	7 231	75	5,424	29	45	"
Jefferson	19.405	101	19,599	52	23	"
Knox	29,992	97	29 092	72	28	"
Lake	3.877	108	4,187	85	16	Fair
Lawrence	7,767	99	7,689	40	38	Bad
Licking	32,594	97	31,616	63	24	"
Logan	24,226	81	19 623	38	25	"
Lorain	15,446	94	14,519	45	30	"
Lucas	16 221	82	13.301	58	26	"
Madison	22,671	110	24,938	45	29	Fair
Mahoning	12,153	92	11 181	74	17	"
Marion	23,194	72	16,700	46	30	Bad
Medina	17,942	98	17,583	63	24	Fair
Meigs	12,529	78	9,773	43	39	Bad
Mercer	35.699	82	29,273	22	25	Fair
Miami	39,880	95	37,886	69	25	"
Monroe	19,283	81	15,619	63	36	"
Montgomery	37,084	90	33,376	70	35	"
Morgan	9,187	84	7,717	40	39	Bad
Morrow	14,489	96	13,909	55	25	Fair
Muskingum	21,454	108	23,170	60	29	"
Noble	13.766	87	11,976	54	32	Bad
Ottawa	16,239	82	13,316	45	20	"
Paulding	15.758	74	11,661	31	35	"
Perry	13,140	95	12.483	58	29	Fair
Pickaway	45,592	97	44,224	42	27	"
Pike	13,641	90	12.277	50	39	Bad
Portage	19,460	105	20,433	80	20	Fair

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1897—Continued.

Counties.	Wheat.					
	Area sown in 1896.	Area sown this fall compared with last year.	Estimated area sown in 1897.	Condition compared with an average.	When sown, days after Sept. 1.	Condition of soil at time of seeding.
	Acres.	Per cent.	Acres.	Per cent.		
Preble	40,556	100	40 556	67	31	Fair
Putnam	28,854	93	26 834	27	33	"
Richland	38,261	88	33,670	43	30	Bad
Ross	37,575	88	33.066	41	40	Fair
Sandusky	32,174	84	27,026	44	38	Bad
Scioto	12,788	92	11,765	45	38	Fair
Seneca	48,543	89	43.203	38	36	Bad
Shelby	32.552	76	24,740	35	38	Fair
Stark	36,849	94	34,638	67	20	Good
Summit	22.468	90	20,221	70	20	"
Trumbull	9,968	98	9.769	86	20	Fair
Tuscarawas	26 868	98	26.331	55	24	Bad
Union	21,695	80	17,356	44	31	"
Van Wert	28,055	90	25,250	50	28	Fair
Vinton	6,688	95	6 354	50	36	Bad
Warren	34,539	93	32,121	41	32	"
Washington	29,142	73	21,274	29	46	"
Wayne	43,310	104	45,042	70	26	Fair
Williams	31,297	80	25,038	40	40	Bad
Wood	47,629	78	37,151	41	35	Fair
Wyandot	20,497	94	19,267	44	32	Bad
Average per cent	....	91	....	51	Sept.29	....
Totals	2,161,295	....	1,974,535	....	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS NOVEMBER 1, 1897—Continued.

Counties.	Barley.				Rye.		
	Area sown in 1896.	Area sown compared with last year.	Estimated area sown in 1897.	Condition compared with an average.	Area sown in 1896.	Sown this fall compared with last year	Estimated area sown in 1897.
	Acres.	Per ct.	Acres	Per ct.	Acres.	Per ct.	Acres.
Adams	9	100	9	70	227	75	170
Allen	14	100	15	50	309	85	263
Ashland	139	90	125	63	130	80	104
Ashtabula	542	100	542	90	355	99	351
Athens	15	100	15	50	43	80	34
Auglaize	361	60	217	50	306	59	211
Belmont	32	102	33	45	146	83	120
Brown	20	105	21	50	964	70	675
Butler	1,428	80	1,152	62	383	88	337
Carroll	29	96	28	80	182	65	118
Champaign	10	105	11	65	333	100	333
Clark	47	100	47	59	827	78	645
Clermont	4	100	4	60	918	52	477
Clinton	65	60	39	60	151	66	100
Columbiana	36	100	36	80	238	73	174
Coshocton	2	100	2	100	207	51	106
Crawford	176	90	158	70	173	62	107
Cuyahoga	20	105	11	70	580	62	360
Darke	485	85	412	46	764	90	688
Defiance	217	90	195	50	328	80	262
Delaware	7	65	5	50	167	69	114
Erie	1 157	100	1,157	90	486	77	374
Fairfield	17	98	17	50	118	54	65
Fayette	27	98	26	45	290	100	290
Franklin	23	100	23	46	86	93	80
Fulton	325	75	244	80	627	90	564
Gallia	9	100	9	60	75	100	75
Geauga	13	105	14	85	72	108	76
Greene	80	50	40	100	432	75	324
Guernsey	16	100	16	100	372	78	290
Hamilton	296	90	236	55	846	60	508
Hancock	27	80	22	68	846	94	795
Hardin	25	100	25	45	497	73	363
Harrison	5	100	5	44	60	100	60
Henry	144	90	130	46	3,098	88	2,726
Highland	10	100	10	49	241	68	164
Hocking	11	98	11	50	78	75	58
Holmes	86	100	86	95	507	94	477
Huron	187	96	180	50	282	84	237
Jackson	2	100	2	80	....	....	....
Jefferson	75	100	75	56	36	90	32
Knox	18	99	18	80	306	76	233
Lake	163	103	167	90	477	92	339
Lawrence	10	80	8	50	125	90	112
Licking	23	100	23	65	337	73	246
Logan	124	90	112	40	313	88	275
Lorain	366	95	348	60	207	80	166
Lucas	547	100	547	70	1,328	78	1,036
Madison	11	105	12	50	354	80	283
Mahoning	31	100	31	75	327	100	327
Marion	62	90	56	50	208	88	183
Medina	32	100	32	65	50	42	21
Meigs	48	80	38	50	32	56	18
Mercer	473	95	449	50	709	70	496
Miami	449	60	269	60	178	78	139
Monroe	2	100	2	65	226	70	158
Montgomery	545	50	273	40	464	90	418
Morgan	....	....	....	....	82	83	68
Morrow	16	100	16	60	615	60	369
Muskingum	25	105	26	65	1,383	74	1,023
Noble	15	100	15	50	69	85	59
Ottawa	1,539	90	1,385	55	380	100	380
Paulding	31	100	31	46	788	62	489
Perry	8	100	8	65	148	85	126
Pickaway	10	100	10	50	123	90	111
Pike	136	95	129	55	2	50	1
Portage	91	105	96	85	159	94	149

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1897—Continued.

Counties.	Barley.				Rye.		
	Area sown in 1896.	Area sown compared with last year.	Estimated area sown in 1897.	Condition compared with an average.	Area sown in 1896.	Sown this fall compared with last year	Estimated area sown in 1897.
	Acres.	Per ct.	Acres.	Per ct.	Acres.	Per ct.	Acres.
Preble	168	85	143	55	322	100	322
Putnam	81	96	77	40	955	80	764
Richland	179	60	107	50	559	100	559
Ross	23	95	22	55	197	95	187
Sandusky	328	90	295	50	617	95	586
Scioto	22	100	22	50	80	96	77
Seneca	62	100	62	100	411	80	329
Shelby	498	70	349	41	288	50	144
Stark	71	100	71	72	196	56	110
Summit	18	100	18	75	139	100	139
Trumbull	18	100	18	90	129	95	123
Tuscarawas	37	100	37	60	179	92	164
Union	5	100	5	50	428	100	428
Van Wert	180	95	171	55	2,085	100	2,085
Vinton	2	100	2	50	90	50	45
Warren	485	100	485	75	440	76	334
Washington	5	89	4	80	155	70	109
Wayne	48	103	49	75	139	80	111
Williams	108	90	97	55	242	100	242
Wood	606	57	345	55	1,494	56	837
Wyandot	28	90	25	62	360	89	320
Totals	13.925	89	11,910	62	35,675	80	28.547

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER 1, 1897—Continued.

Counties.	Corn.	Buck-wheat.	Clover seed.	Potatoes.			
	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Area for 1897.	Average product per acre.	Total estimated product for 1897.	Affected by rot.
	Per ct.	Per ct.	Per ct.	Acres.	Bus.	Bushels.	Per ct.
Adams	76	....	115	218	47	10,246	1
Allen	79	75	112	809	7	5,663	....
Ashland	79	73	107	1,072	49	52,528	14
Ashtabula	82	82	165	3,156	67	211,452	11
Athens	85	....	140	933	41	38,253	....
Auglaize	77	65	95	1,049	31	32,519	....
Belmont	71	72	141	1,654	49	81,046	1
Brown	90	....	142	920	28	25,760	2
Butler	79	55	125	1,507	41	61,787	12
Carroll	69	60	95	510	34	17,340	11
Champaign	88	....	138	1,090	10	10,900	....
Clark	81	....	92	1,403	32	44,896	....
Clermont	82	85	96	1,637	40	65,480	3
Clinton	89	92	83	2,913	38	110,694	2
Columbiana	69	89	104	1,605	58	93,090	3
Coshocton	75	67	111	1,141	41	46,781	1
Crawford	80	100	103	1,048	40	41,920	....
Cuyahoga	74	70	166	5,192	80	415,360	4
Darke	81	79	135	2,321	14	32,494	....
Defiance	80	97	87	954	52	49,608	....
Delaware	73	85	72	804	28	22,512	1
Erie	83	78	121	2,607	70	182,490	1
Fairfield	76	65	65	1,451	38	55,138	2
Fayette	87	....	103	189	25	4,725	....
Franklin	79	75	80	3,362	36	121,032	3
Fulton	81	80	105	1,246	56	69,776	5
Gallia	80	....	85	500	40	20,000	2
Geauga	83	93	109	1,872	73	136,656	5
Greene	83	....	89	922	43	39,646	....
Guernsey	68	78	119	623	34	21,182	1
Hamilton	72	50	100	5,388	51	274,788	5
Hancock	78	76	130	1,308	30	39,240	4
Hardin	84	100	113	2,543	14	35,602	....
Harrison	71	60	160	346	63	21,798	2
Henry	84	50	92	1,099	40	43,960	....
Highland	79	50	120	294	33	9,702	5
Hocking	75	50	155	707	50	35,350	1
Holmes	80	83	94	869	42	36,498	2
Huron	79	84	118	1 438	43	61,834	2
Jackson	80	....	....	165	32	5,280	....
Jefferson	80	70	162	1,796	44	79,024	1
Knox	69	65	115	703	38	26,714	3
Lake	95	90	128	789	82	64,698	8
Lawrence	90	100	170	424	54	22,896	....
Licking	78	67	101	1,476	45	66,420	1
Logan	74	86	95	652	20	13,040	6
Lorain	77	85	117	1,537	62	95,294	1
Lucas	81	62	98	3,197	64	204,608	2
Madison		....	85	436	44	19,184	1
Mahoning	67	92	115	2,994	66	197,604	3
Marion	81	85	94	1,190	30	35,700	1
Medina	81	76	131	1,540	84	129,360	2
Meigs	76	28	68	1,218	39	47,502	1
Mercer	83	11	87	806	25	20,150	....
Miami	85	80	106	1,950	19	37,050	3
Monroe	81	68	100	1,304	66	86,064	3
Montgomery	77	80	97	1,634	33	52 288	....
Morgan	82	42	136	675	36	24:300	4
Morrow	73	50	106	1,373	41	56,293	1
Muskingum	79	84	114	1,444	44	63 536	5
Noble	87	81	114	719	50	35,950	2
Ottawa	92	80	137	650	17	11,050	....
Paulding	82	87	70	631	25	15,775	....
Perry	90	35	115	698	42	29,316	....
Pickaway	80	....	94	1,000	30	30,000	3
Pike	78	75	98	500	32	16,000	1
Portage	72	99	139	4,945	86	425,270	3

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE, AND CONDITION OF CROPS, NOVEMBER 1, 1897—Continued.

Counties.	Corn.	Buckwheat.	Clover seed.	Potatoes.			
	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Area for 1897.	Average product per acre.	Total estimated product for 1897.	Affected by rot.
	Per ct.	Per ct.	Per ct.	Acres.	Bus.	Bushels.	Per ct.
Preble	82	75	117	629	44	27,676	....
Putnam	80	....	142	2,911	30	87,330	....
Richland	90	95	108	1,622	32	51,904	5
Ross	76	50	133	1.507	35	52,745	....
Sandusky	80	....	106	1,913	59	112,867	....
Scioto	83	....	95	963	40	38,520	2
Seneca	70	100	119	1,710	44	75,240	1
Shelby	66	91	115	836	11	9,746	....
Stark	70	40	76	2,346	43	100 878	11
Summit	68	25	107	2,065	76	156,940	3
Trumbull	66	85	109	2,612	61	159,332	17
Tuscarawas	79	73	92	1,831	63	115,353	2
Union	73	75	78	571	31	17,701	....
Van Wert	80	67	183	901	30	27,030	1
Vinton	80	67	122	379	39	14,781	....
Warren	82	95	98	842	49	41,258	1
Washington	93	88	122	2,461	34	83 674	2
Wayne	87	95	90	1,984	45	89,280	6
Williams	90	....	80	985	40	39,400	10
Wood	75	70	78	1,310	23	30,130	1
Wyandot	74	55	116	846	27	22,842	13
Totals	79	72	112	125.217	47′	5,944,939	3

Official Report of the Ohio Department of Agriculture on the Acreage and Condition of Crops, November 1, 1897—Continued.

Counties.	Apples	Hogs.		Com. Fert.
	Product compared with an average.	Condition compared with an average.	Number to be fattened compared with 1896.	Farmers using in wheat.
	Per ct.	Per ct.	Per ct.	Per ct.
Adams	27	99	86	71
Allen	40	96	98	9
Ashland	18	96	83	50
Ashtabula	18	100	99	77
Athens	31	99	95	84
Auglaize	40	92	90	1
Belmont	7	99	95	41
Brown	27	98	94	51
Butler	6	89	84	2
Carroll	26	84	83	57
Champaign	3	90	82	1
Clark	19	100	96	9
Clermont	22	90	86	57
Clinton	25	89	82	19
Columbiana	18	95	90	64
Coshocton	28	94	98	32
Crawford	15	90	93	27
Cuyahoga	15	95	92	91
Darke	42	89	89	14
Defiance	40	97	87	0
Delaware	12	95	95	25
Erie	18	94	95	39
Fairfield	23	86	83	38
Fayette	25	94	98	31
Franklin	31	97	88	13
Fulton	18	75	88	1
Gallia	35	85	65	70
Geauga	4	100	99	80
Greene	7	89	93	14
Guernsey	30	74	95	60
Hamilton	18	98	98	6
Hancock	50	99	94	5
Hardin	32	102	89	0
Harrison	18	100	93	41
Henry	48	100	100	10
Highland	24	84	81	74
Hocking	35	100	100	80
Holmes	39	98	99	40
Huron	14	100	92	69
Jackson	45	100	100	80
Jefferson	12	98	95	59
Knox	13	97	93	64
Lake	13	98	95	33
Lawrence	16	103	88	43
Licking	20	98	91	32
Logan	31	91	85	8
Lorain	9	96	85	75
Lucas	23	97	88	7
Madison	38	80	83	0
Mahoning	18	92	95	78
Marion	14	83	88	1
Medina	9	95	94	95
Meigs	23	98	98	80
Mercer	38	78	85	2
Miami	12	95	100	20
Monroe	23	98	95	63
Montgomery	13	87	92	38
Morgan	22	96	81	91
Morrow	14	94	90	49
Muskingum	32	99	94	87
Noble	27	95	94	52
Ottawa	32	102	102	2
Paulding	47	95	95	0
Perry	26	95	100	100
Pickaway	18	97	91	24
Pike	32	90	75	74
Portage	6	96	101	88

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND CONDITION OF CROPS, NOVEMBER, 1, 1897—Concluded.

Counties.	Apples	Hogs.		Com. Fert.
	Product compared with an average.	Condition compared with an average.	Number to be fattened compared with 1896.	Farmers using in wheat.
	Per ct.	Per ct.	Per ct.	Per ct.
Preble	17	100	101	89
Putnam	43	93	78	1
Richland	18	100	97	52
Ross	28	87	87	50
Sandusky	22	98	95	5
Scioto	32	100	100	55
Seneca	16	94	94	55
Shelby	20	95	79	9
Stark	16	90	79	9
Summit	18	97	91	54
Trumbull	4	100	97	91
Tuscarawas	26	100	101	38
Union	18	98	95	4
Van Wert	32	100	83	0
Vinton	32	101	97	84
Warren	16	95	94	28
Washington	14	98	91	74
Wayne	15	99	101	59
Williams	25	80	75	2
Wood	54	94	84	7
Wyandot	22	98	98	8
Totals	23	95	91	41

OFFICIAL REPORT

OF THE

OHIO STATE BOARD OF AGRICULTURE

ON THE

ACREAGE AND PRODUCT OF CORN AND THE CONDITION OF OTHER CROPS DECRMBER 1, 1897

The following estimates represent condition or prospect of crops, as reported to the Department by its regular corps of township correspondents, reports being received December 1, and covering every county and nearly every township of the state:

WHEAT—Condition compared with an average	63 per cent·
" Crop of 1897 sold as soon as threshed	45 per cent.
" Damage to growing crop by Hessian fly	2 per cent.
CORN—Estimated area for 1897	2,750,039 acres.
" Average yield per acre	33.67 bushels.
" Total estimated product for 1897	92,608,123 bushels.
" Cut up for fodder	84 per cent.
" Put into silo	7 per cent.
" Average date of cutting for fodder	19 Sept.
" Average date of cribbing	19 Oct.
CLOVER SEED—Probably total yield compared with average	111 per cent.
APPLES—Probable total yield compared with average	21 per cent.
POTATOES—Average yield per acre	43 bushels.
TOBACCO—Estimated product per acre	741 pounds.
CATTLE—Fed for spring market compared with last year	82 per cent.
SHEEP—Fed for mutton compared with last year	76 per cent.

On November 1 the severe drouth that had prevailed for many weeks was broken, and during the early part of the month the weather conditions were favorable to the germination and growth of wheat; and the result is an estimated improvement of twelve points as compared with the estimate made on November 1 for the month of October. While some improvement is shown, the condition of wheat at this time is still thirty-seven points below a fair average condition, and will not go into winter in a sufficiently vigorous condition to withstand freezing and thawing. A favorable winter, with considerable snow protection is required to protect and advance the plant toward anything like a fair average prospect.

This is the first report of the year estimating the corn crop in bushels. While many counties show a fair average production, there are also many that show from a poor to a medium product. This uneven distribution of the crop is in a great measure due to the season. The crop was late in being planted and the condition of the soil during the planting season was not good, and considerable had to be replanted. Taking the state as a whole, there is, however, a fairly good crop of corn, compared with a series of years. It is estimated to be about twenty-seven million bushels short ot the crop of 1896, but that crop was an extraordinary large one; it is only about four millions less than the crop of 1895. The production of corn the present year exceeds the average product for a number of years previous to 1895; as to quality, it is not all prime, considerable is rated as unmerchantable.

The estimated yield of clover seed and of potatoes is practically the same as reported last month. Potatoes being only about a half crop, and clover seed an unusually large yield.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE PRODUCT OF CORN AND CONDITION OF OTHER CROPS, DECEMBER 1, 1897.

Counties.	Wheat.			
	Condition compared with an average.	Crop of 1897, sold as soon as threshed.	Damage to growing crop by Hessian fly.	Damage to growing crop by white grub worm.
	Per cent.	Per cent.	Per cent.	Per cent.
Adams	62	39	1	1
Allen	50	57	5	0
Ashland	82	42	4	3
Ashtabula	91	35	2	1
Athens	59	41	0	0
Auglaize	63	59	4	0
Belmont	51	27	0	1
Brown	72	38	0	0
Butler	77	42	1	1
Carroll	73	30	4	3
Champaign	64	59	1	1
Clark	73	58	2	0
Clermont	69	44	1	0
Clinton	71	66	1	0
Columbiana	85	24	4	2
Coshocton	61	46	1	0
Crawford	57	30	0	0
Cuyahoga	73	35	2	0
Darke	71	53	1	0
Defiance	51	59	0	0
Delaware	48	47	1	0
Erie	61	52	2	0
Fairfield	67	39	2	1
Fayette	67	65	0	0
Franklin	48	48	1	0
Fulton	69	58	2	0
Gallia	55	50	0	0
Geauga	81	13	4	1
Greene	53	50	0	0
Guernsey	47	38	2	0
Hamilton	65	40	0	0
Hancock	61	42	3	0
Hardin	66	58	0	0
Harrison	57	17	1	1
Henry	52	52	2	0
Highland	55	46	2	0
Hocking	64	43	1	1
Holmes	72	38	1	0
Huron	55	60	4	0
Jackson	71	28	2	1
Jefferson	63	34	2	2
Knox	84	30	1	0
Lake	88	31	0	0
Lawrence	65	62	1	0
Licking	77	40	1	1
Logan	60	57	3	1
Lorain	75	34	0	0
Lucas	66	62	0	0
Madison	65	88	1	0
Mahoning	88	45	1	0
Marion	67	69	0	0
Medina	67	33	1	1
Meigs	54	36	0	1
Mercer	37	52	2	0
Miami	82	51	0	2
Monroe	66	39	1	1
Montgomery	68	28	0	0
Morgan	46	27	3	1
Morrow	65	37	4	0
Muskingum	69	34	4	2
Noble	65	29	3	1
Ottawa	77	62	0	0
Paulding	51	60	0	0
Perry	66	40	0	1
Pickaway	71	60	1	0
Pike	70	75	0	0
Portage	63	40	1	0

OFFCIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE PRODUCT OF CORN AND CONDITION OF OTHER CROPS, DECEMBER 1, 1897—Continued.

Counties.	Wheat.			
	Condition compared with an average.	Crop of 1897 sold as soon as threshed.	Damage to growing crop by Hessian fly.	Damage to growing crop by white grub worm.
	Per cent.	Per cent.	Per cent.	Per cent.
Preble	88	39	1	0
Putnam	55	75	0	0
Richland	60	50	7	2
Ross	57	51	1	1
Sandusky	57	32	2	0
Scioto	62	45	0	1
Seneca	57	40	1	0
Shelby	45	60	0	0
Stark	79	31	4	2
Summit	84	34	4	1
Trumbull	87	28	1	0
Tuscarawas	68	36	0	1
Union	59	67	1	1
Van Wert	55	52	0	0
Vinton	71	47	0	1
Warren	66	37	2	1
Washington	45	42	2	0
Wayne	78	28	5	1
Williams	50	20	0	0
Wood	48	59	2	1
Wyandot	67	43	3	0
Average per cent	63	45	2	0.50
Totals				

OFFICIAL RERPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE PRODUCT OF CORN AND CONDITION OF OTHER CROPS DECEMBER 1, 1897—Continued.

Counties.	Corn.						
	Estimated area for 1897.	Average yield per acre.	Total estimated product for 1897.	Cut up for fodder.	Put into Silo.	Date of cutting for fodder, days after Sept. 1.	Date cribbing began, days after Oct. 1.
	Acres.	Bus.	Bushels.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	32.287	23	742,601	85	....	22	25
Allen	30,722	37	1,136,714	87	1	13	18
Ashland	24 382	40	975 280	93	12	23	20
Ashtabula	8 580	35	300 300	96	8	23	17
Athens	15,278	32	488 896	96	5	16	19
Auglaize	34 239	33	1,129.887	77	....	17	14
Belmont	25,709	31	796.979	94	4	21	14
Brown	45,415	31	1,407.865	84	....	24	35
Butler	56,748	37	2,099,676	30	1	25	22
Carroll	12.967	22	285,274	84	....	22	15
Champaign	53,263	34	1,810,942	78	8	19	21
Clark	45,997	37	1,701 889	83	7	17	22
Clermont	34,312	28	960,736	86	3	20	36
Clinton	49,374	36	1,777,464	74	5	22	17
Columbiana	17 383	31	538,873	99	3	18	20
Coshocton	22,736	35	795,760	98	1	21	17
Crawford	34,356	34	1,168,104	93	....	25	24
Cuyahoga	9,570	27	258 390	75	22	22	10
Darke	74,966	31	2,323,946	45	....	19	16
Defiance	21,887	32	700,384	90	....	18	12
Delaware	32;513	28	910,364	91	3	14	15
Erie	16,176	36	582,336	87	5	20	20
Fairfield	45.360	30	1,360,800	93	5	17	18
Fayette	56,885	39	2.218,605	85	....	15	31
Franklin	59,316	37	2,194,692	85	5	17	18
Fulton	25,384	32	812 288	65	4	12	11
Gallia	21,955	33	724.515	96	....	12	17
Geauga	7,615	32	243.680	75	2	25	16
Greene	56,446	44	2 483,624	75	3	16	18
Guernsey	1,722	23	39,606	92	10	18	11
Hamilton	15,898	26	413,348	58	....	19	28
Hancock	48,182	31	1,493,642	90	....	19	18
Hardin	34,889	33	1 151,337	91	....	19	16
Harrison	13,212	32	422,784	87	10	20	19
Henry	41,753	39	1 628,367	89	....	14	9
Highland	44,128	31	1,367,968	86	....	21	26
Hocking	13,679	32	437,728	94	4	19	16
Holmes	23,101	24	554,424	90	....	20	23
Huron	24,702	29	716,358	82	4	22	15
Jackson	11,987	26	311.662	90	....	22	35
Jefferson	13,456	36	384,416	88	8	21	25
Knox	30,805	27	831,735	99	....	23	13
Lake	2,830	43	121,690	80	5	30	24
Lawrence	20,473	36	737,028	96	1	25	28
Licking	48,268	30	1,448,040	90	1	20	15
Logan	35,834	45	1,712,530	86	17	22	18
Lorain	12,521	34	425,714	78	12	25	13
Lucas	18,297	35	640,395	64	7	16	4
Madison	77.828	35	2,723.980	53	1	15	17
Mahoning	15,757	27	425,439	73	9	22	13
Marion	36,595	36	1,317,420	83	15	16	18
Medina	18,756	28	525,168	95	9	26	14
Meigs	14,905	28	417 340	93	....	16	21
Mercer	51,365	25	1,284,125	95	....	12	17
Miami	49,523	34	1,683.782	68	2	14	16
Monroe	15,826	24	379,824	98	....	18	24
Montgomery	49,151	37	1,818,587	85	....	12	9
Morgan	15 677	36	564,372	97	....	19	17
Morrow	23,806	26	618,956	93	1	19	15
Muskingum	29,718	29	861,822	99	1	24	22
Noble	15.616	35	546,560	96	....	16	20
Ottawa	14 823	42	622.566	85	....	20	13
Paulding	28.167	38	1,070,346	75	....	19	26
Perry	32,238	42	1,353,996	100	....	18	15
Pickaway	71,146	39	2,774,694	90	10	18	14
Pike	17,766	36	639.576	75	....	15	35
Portage	14,262	29	413,598	82	5	18	16

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE PRODUCT OF CORN AND CONDITION OF OTHER CROPS, DECEMBER 1, 1897—Continued.

Counties.	Corn.						
	Estimated area for 1897.	Average yield per acre.	Total estimated product for 1897.	Cut up for fodder.	Put into Silo.	Date of cutting for fodder, days after Sept. 1.	Date cribbing began days after Oct. 1.
	Acres.	Bus.	Bushels.	Per ct.	Per ct.	Per ct.	Per ct.
Preble	51,460	32	1,646,720	46	....	24	20
Putnam	50 171	42	2 107 182	89	....	15	20
Richland	27,768	48	1,332 864	90	....	26	23
Ross	62,368	33	2,058,144	84	1	21	19
Sandusky	32,624	33	1,076 592	92	....	13	18
Scioto	18.766	38	713,108	71	....	26	29
Seneca	39,631	35	1,387,085	94	2	16	14
Shelby	38.910	28	1,089,480	74	....	24	22
Stark	26,765	34	910 010	92	7	20	12
Summit	15,681	32	501 792	74	11	22	18
Trumbull	12,041	30	361,230	77	4	16	12
Tuscarawas	22,067	27	595,809	85	27	15	17
Union	53.564	28	1,499,792	78	....	18	25
Van Wert	41,775	33	1,378,575	87	....	20	16
Vinton	12,619	24	302,856	96	....	15	10
Warren	54,273	35	1,899,555	80	3	25	26
Washington	22,836	32	730,752	98	2	21	21
Wayne	34.371	34	1,168,614	75	15	25	17
Williams	22,765	40	910,600	90	....	15	20
Wood	68 029	34	2,312,986	54	3	9	17
Wyandot	29,021	28	812,588	80	20	22	22
Average per cent.	....	33.67	....	84	7	Sept. 19	Oct. 19
Totals	2,750,039	....	93,068,123	....	....	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE PRODUCT OF CORN AND CONDITION OF OTHER CROPS DECEMBER 1, 1897.—Continued.

Counties.	Clover seed.	Apples.	Potatoes	Tobacco	Cattle.	Sheep.
	Probable total yield compared with an average.	Probable total yield compared with an average.	Average yield per acre.	Estimated product per acre.	Fed for spring market compared with last year.	Number fed for mutton compared with last year.
	Per cent.	Per cent.	Bushels.	Pounds.	Per cent.	Per cent.
Adams	127	21	37	740	82	75
Allen	100	30	18	....	90	91
Ashland	103	10	54	....	74	87
Ashtabula	128	6	64	....	81	75
Athens	137	32	38	....	90	75
Auglaize	74	36	29	....	72	66
Belmont	124	8	37	733	76	55
Brown	133	25	30	866	100	75
Butler	119	10	36	800	94	89
Carroll	87	10	38	....	73	81
Champaign	78	14	26	....	83	83
Clark	75	15	25	....	97	100
Clermont	88	23	26	725	90	80
Clinton	88	28	36	517	85	81
Columbiana	109	17	59	....	89	79
Coshocton	116	30	38	....	73	72
Crawford	110	12	37	....	78	78
Cuyahoga	162	22	75	....	50	....
Darke	145	28	17	775	85	30
Defiance	88	27	43	....	93	82
Delaware	86	13	28	....	84	53
Erie	138	18	65	....	100	103
Fairfield	92	17	39	....	86	66
Fayette	119	27	36	....	109	50
Franklin	78	20	30	....	69	54
Fulton	125	17	44	....	97	102
Gallia	98	15	40	....	48	100
Geauga	110	5	87	....	85	62
Greene	53	5	40	....	75	75
Guernsey	112	27	37	....	60	55
Hamilton	82	30	42	....	....	....
Hancock	130	37	31	....	91	87
Hardin	113	51	27	....	62	100
Harrison	143	13	43	....	100	100
Henry	63	47	37	....	69	71
Highland	112	20	29	....	77	47
Hocking	109	26	42	....	79	74
Holmes	117	18	29	....	68	82
Huron	113	17	52	....	86	69
Jackson	....	52	45	....	40	30
Jefferson	155	15	42	....	100	92
Knox	117	11	39	....	72	67
Lake	150	17	75	....	112	100
Lawrence	88	20	57	500	82	77
Licking	105	18	34	....	75	81
Logan	74	21	26	....	76	75
Lorain	117	20	76	....	81	81
Lucas	96	28	70	....	100	90
Madison	66	15	31	....	71	71
Mahoning	133	18	47	....	87	65
Marion	90	18	32	....	89	94
Medina	135	8	61	....	83	76
Meigs	95	14	39	....	66	66
Mercer	125	45	25	....	75	50
Miami	118	12	26	787	100	92
Monroe	168	12	69	775	90	95
Montgomery	97	10	27	850	100	75
Morgan	149	23	35	800	83	60
Morrow	110	9	35	....	69	64
Muskingum	143	24	29	700	82	70
Noble	119	22	77	850	79	78
Ottawa	125	25	50	....	102	90
Paulding	78	39	35	....	87	66
Perry	153	40	63	....	92	83
Pickaway	80	16	30	....	92	75
Pike	80	20	25	....	....	....
Portage	166	5	84	....	79	82

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE PRODUCT OF CORN AND CONDITION OF OTHER CROPS, DEC. 1, 1897—Coucluded.

Counties.	Clover seed.	Apples.	Potatoes	Tobacco	Cattle.	Sheep.
	Probable total yield compared with an average.	Probable total yield compared with an average.	Average yield per acre.	Estimated product per acre.	Fed for spring market compared with last year.	Number fed for mutton compared with last year.
	Per cent.	Percent.	Bushels.	Pounds.	Percent.	Percent.
Preble	121	19	44	664	86	67
Putnam	116	45	21	....	92	68
Richland	107	23	40	....	47	70
Ross	119	26	31	....	77	96
Sandusky	105	13	53	....	106	66
Scioto	88	38	45	1.000	80	100
Seneca	107	19	52	....	79	79
Shelby	118	13	22	....	56	50
Stark	95	16	47	650	59	57
Summit	127	12	75	....	77	73
Trumbull	105	4	58	....	85	74
Tuscarawas	87	26	61	....	73	80
Union	106	8	30	....	84	96
Van Wert	132	18	33	....	97	93
Vinton	144	16	39	....	52	50
Warren	137	12	48	566	99	90
Washington	139	16	42	700	83	83
Wayne	102	16	42	830	88	69
Williams	100	40	70	....	100	100
Wood	86	49	35	....	80	76
Wyandot	107	20	30	....	81	90
Average per cent	111	21	43	741	82	75
Totals	....	....	....	....	....	....

TABLE SHOWING THE ANNUAL PRODUCTION AND PRICE OF WHEAT AND CORN FOR THE YEARS 1850 TO 1897, INCLUSIVE.

Year.	Bushels of wheat.	Average number of bushels per acre.	Price.		Bushels of corn.	Average number of bushels per acre.	Price.	
			Range.	Average.			Range.	Average.
1850	31,500,000	18.	$0.70 to $1.10	.89	56,619,608	36 8	$0.24 to $0.51	.38
1851	25,309,225	15.2	.58 “ .78	.69	61,271,382	36.7	.30 “ .94	.38
1852	23,043,737	14.1	.59 “ .63	.60	58,165.517	33.6	.25 “ .45	.39
1853	17,118,311	12.	.60 “ .85	.73	73,436,070	40.	.37 “ .55	.42
1854	11,989,110	8.	.85 “ 1.70	1.19	52,171,551	26.	.40 “ .55	.49
1855	19 569,320	13.81	1.10 “ 2.00	1.54	87,587,434	39.7	.55 “ .80	.67
1856	15,333,837	10.2	.90 “ 1.70	1.27	57,802.515	27.7	.32 “ .63	.42
1857	25,397,614	14.	1.00 “ 1.60	1.18	82,555,186	36.6	.48 “ .80	.59
1858	17 655,483	10.4	.67 “ 1.00	.77	50,863,582	27.7	.25 “ .61	.42
1859	13,317,967	7.2	.90 “ 1.70	1.15	68,780,846	29.5	.50 “ .90	.72
1860	23,640,356	13.8	.93 “ 1.38	1.17	91,588,704	38.2	.39 “ .80	.50
1861	20,055,424	11.	.65 “ 1.12	.93	74 858,878	33.5	.28 “ .50	.34
1862	20,764,887	12.	.72 “ 1.00	.86	62,704,887	30.	.27 “ .40	.31
1863	20,452,410	11.36	.82 “ 1.30	1.04	54,614,617	27.	.35 “ .70	.53
1864	15,541,885	9.33	.95 “ 2.12	1.41	54,053,491	27.	.63 “ 1.27	1.03
1865	13,234,139	9.	1.25 “ 2.07	1.78	68,053,668	35.	.56 “ 1.29	.77
1866	5,821,747	4.5	1.75 “ 2.80	2.27	80,386,320	36.5	.45 “ .65	.54
1867	13,350,721	11.51	1.95 “ 3.50	2.79	63,875,064	29.8	.59 “ .98	.79
1868	16,480 059	11.31	1.90 “ 2.65	2.31	76,725,288	34.4	.82 “ 1.08	.92
1869	26,499,729	15.37	1.15 “ 1.98	1.57	62,443,346	28.4	.57 “ 1.10	.73
1870	18,726,341	11.29	1.08 “ 1.33	1.15	88,565,299	37.5	.69 “ 1.05	.83
1871	22,274,378	13.27	1.10 “ 1.55	1.27	98,363,060	36.7	.50 “ .79	.56
1872	18,987,664	11.22	1.13 “ 2.08	1.58	103,058,234	40.9	.44 “ .57	.49
1873	21,974,385	12.61	1.30 “ 1.80	1.56	84,049,328	35.1	.39 “ .50	.42
1874	26,806,818	14.51	1.03 “ 1.60	1.38	101,815,494	39.8	.42 “ .75	.60
1875	17,867,967	9.22	1.03 “ 1.75	1.16	97,825,024	34.1	.58 “ .87	.72
1376	15,354,569	10.18	1.00 “ 1.50	1.10	112,552,642	36.8	.40 “ .73	.51
1877	27,306,566	15.63	1.08 “ 2.15	1.41	101,884,305	32.5	.40 “ .57	.46
1878	35,218,783	16.58	.85 “ 1.35	1.11	114,839,107	37.8	.48 “ .49	.42
1879	41,052,120	17.78	.85 “ 1.15	.96	96,908,800	34.	.31 “ .45	.37
1880	48,540,307	17.20	.93 “ 1.37	1.16	105,414.504	38.9	.42 “ .51	.42
1881	38,102,633	13.8	.88 “ 1.39	1.10	78,712,796	31.	.40 “ .87	.49
1882	42,112,103	15.59	.95 “ 1.50	1.32	90,869,137	34.	.56 “ .87	.72
1883	27,169,738	10.67	.95 “ 1.17	1.05	64,001,618	24.2	.44 “ .76	.54
1884	36,396,119	14.4	.80 “ 1.10	1.01	87,797.813	33.3	.40 “ .62	.53
1885	24,183.430	9.8	.72 “ 1.09	.89	112,192,744	39.	.37 “ .59	.47
1886	37,660,681	14.	.74 “ 1.00	.88	88,818,556	33.5	.32 “ .48	.39
1887	28,400,000	10.4	.71 “ .89	.80	83,118,838	30.5	.31 “ .55	.40
1888	26,160,994	11.7	.71 “ .96	.85	111,155,506	38.9	.44 “ .61	.52

1889	31,663,448	14.6	.73 " 1.15	.93	87,838,192	32.3	.30 " .49	.37
1890	31,509,676	13.8	.75 " 1·02	.83	63,694,215	24.5	.27 " 56	36
1891	45,063,480	17.5	.82 " 1.16	.99	86,500,000	33.	.49 " .77	.60
1892	40,254,621	14.4	.73 " 1.01	.90	80,802,958	30.8	.39 " ·67	.48
1893	46,545,258	17.2	.52 " .93	.64	67,681,125	25.	.37 " .45	.42
1894	50,852,433	20.	.48 " .56	.51	70,712,925	25.	.35 " .59	,45
1895	26,520,930	11.9	.53 " .90	.66	96.263,789	33.9	.24 " .56	.41
1896	17,269.545	8.53	.55 " .97	.72	119,547,107	41.	.18 " .33	.27
1897	38,194,086	17.67	.72 " 1.00	.88	93,068,123	33.67	.22 " .34	.28

NOTE—Prices here given relate to the commercial year ending September 1.

TABLE SHOWING THE AVERAGE PRODUCTION AND PRICE OF WHEAT AND CORN BY DECADES.

Decades	Average bushels of wheat.	Average bushels per acre.	Range of price.	Average price.	Average bushels of corn.	Average bushels per acre.	Range of price.	Average price.
1850 to 1860	20.023,460	12.29	$0 58 to $2 00	$1 00	64,920,369	33.4	$0 24 to $0 90	$0 48
1860 to 1870	17,584,085	10.91	60 to 3 50	1 61	68.930,426	32.	27 to 1 29	64
1870 to 1880	24,656,959	13.29	85 to 2 15	1 27	99,986,129	36.5	38 to 1 05	54
1880 to 1890	34,038,945	13.21	71 to 1 50	1 00	90,991,979	33.5	30 to 87	45
Last ten years. 1888 to 1897. inclusive	35,403,447	14.73	48 to 1 16	79	87,726,394	31.8	18 to 77	42

AVERAGE PRICES OF OTHER FARM PRODUCTS IN THE LOCAL MARKETS OF OHIO FROM 1855 TO 1897, INCLUSIVE.

Year.	Barley.	Oats.	Rye.	Hay.	Potatoes.
1855	$1 35	$0 29½	$0 70	$14 71	....
1856	1 58	46	91	21 00	....
1857	58	36	58	13 46	....
1858	67	57	82	15 38	....
1859	76	43	86	17 73	....
1860	69	27	56	12 62	....
1861	60	30	48	11 85	....
1862	1 36	58	76	16 34	....
1863	1 51	78½	1 35	27 16	....
1864	1 28	52	1 15	26 00	....
1865	1 41	42	80	12 63	....
1866	1 53	57	1 28	19 76	....
1867	2 11	69	1 62	14 80	....
1868	2 37	64	1 28	16 42	....
1869	1 26	54	92	17 44	....
1870	1 00	46	91	18 45	....
1871	78	37	85	20 79	....
1872	87	36	76	22 18	....
1873	1 51	48	93	17 16	....
1874	1 41	59	1 06	20 98	....
1875	1 20	38	74	17 66	....
1876	90	37	74	11 67	$2 82
1877	52	29	59	9 86	1 44
1878	1 00	27	54	10 79	1 83
1879	89	34	82	15 87	1 16
1880	98	38	1 04	16 36	2 18
1881	1 05	50	94	17 90	3 30
1882	76	39	62	12 39	2 09
1883	76	34	62	11 63	1 47
1884	80	32	63	12 81	1 59
1885	86	30	63	12 16	1 54
1886	61	29	58	11 17	1 69
1887	81	33	62	14 79	2 74
1888	78	26	52	12 74	1 30
1889	57	27	50	10 56	1 67
1890	77	48	81	10 58	2 99
1891	70	33	85	11 25	1 45
1892	69	33	73	11 10	1 75
1893	64	32	55	12 55	2 30
1894	60	35	52	10 95	2 08
1895	56½	27	53	12 70	1 56
1896	34	20	36	12 83	85
1897	34	22	39	11 00	1 35
Average	$0 97	$0 40	$0 80	$15 00	$1 87

Barley Oats and Rye are rated per bushel; Hay rated per ton; Potatoes rated per barrel.

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS—Concluded.

Counties.	Number of horses.		Number of cattle.		Number of mules.		Number of sheep.		Number of hogs.	
	1896.	1897.*	1896.	1897.	1896.	1897.	1896.	1897.	1896.	1897.
Stark	15,443	14,728	24,692	24,048	356	319	26,215	23,453	22,611	24,276
Summit	9,523	8,848	16,848	15,778	72	83	9,935	7,915	9,028	8,809
Trumbull	11,941	11.247	26,089	26,897	65	57	30,041	26,922	7,800	6,953
Tuscarawas	8,483	7,945	19,277	18,796	125	130	32,781	28,681	14 859	15,727
Union	7,704	7,546	11.069	11,182	49	31	37,395	36,150	21,239	21,977
Van Wert	8,901	8,370	10,522	9,413	178	141	10,595	9,273	22,469	16,393
Vinton	2,814	2,659	5.475	5,350	146	117	22,420	18,152	3,254	3,240
Warren	9,742	9,464	11,537	11,569	407	383	14,408	11,577	16,526	18,649
Washington	8,110	7,749	13,798	13,772	183	164	38,472	32,961	7,739	7,838
Wayne	11,217	11,165	20,720	20,615	171	182	22.823	21,573	22,709	27,454
Williams	6,672	6,192	11,009	10,122	68	65	22,376	21,521	19,130	17,891
Wood	11,159	11,640	14,974	15 807	130	130	20,374	19,478	26,397	29,694
Wyandot	7.216	7,227	10.403	11,191	71	51	59,462	56,475	23,678	26,155
Totals	759,482	724,033	1,175,475	1,171,377	16,398	15,326	2,293,686	2,122,595	1,407,758	1,454,403

*Report of 1897 does not include the city of Cleveland.

Horses, 35,449 decrease; Cattle, 4,098 decrease; Mules, 1,072 decrease; Sheep, 171,091 decrease; Hogs, 46,645 increase.

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS—Continued.

Counties.	Number of horses.		Number of cattle.		Number of mules.		Number of sheep.		Number of hogs.	
	1896.	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.	1897.
Highland	9,252	8,518	14,514	14,401	265	235	18,692	17,770	31,145	29,757
Hocking	4,046	3,743	8,192	7,757	87	61	17,769	14,018	6,647	6,169
Holmes	6,408	6,303	13,980	13,234	96	86	25,198	23,737	16,146	20,343
Huron	8,460	8,278	12,435	12,063	87	92	46,321	46,985	12,358	13,629
Jackson	3,692	3,609	8,871	8,648	808	795	11,827	9,031	4,613	4,600
Jefferson	6,212	6,307	9,815	10,479	180	188	46,273	49,064	6,694	8,062
Knox	8,592	8,059	14,363	14,648	111	110	76,411	73,681	18,344	23,111
Lake	4,614	4,560	6,026	6,015	26	15	7,914	6,795	1,955	1,774
Lawrence	3,685	3,668	6,544	7,120	545	515	3,619	3,257	4,651	4,791
Licking	13,915	12,825	22,356	21,233	126	116	92,243	81,652	26,500	30,425
Logan	9,115	8,711	13,324	12.781	72	71	34,237	30,074	20,246	23,835
Lorain	8,699	9,521	19,107	20,262	33	41	25,019	21,677	8,128	7,893
Lucas	8,826	8.635	7,813	7,765	118	91	2.736	2,693	6,054	7,589
Madison	10,392	9.671	15.490	16,448	239	234	31,854	29,586	26,147	32,549
Mahoning	9,029	8,963	14,501	14,853	86	75	26,877	25,143	7,507	8,373
Marion	8.142	7,543	11,779	12,243	124	131	50,035	44,750	21,786	23,395
Medina	8,326	8,086	15,240	14,871	137	116	32,606	30,119	8,932	9,479
Meigs	5.679	5,407	8,912	9,159	289	258	27,775	25,956	4,795	5,205
Mercer	8,295	8,246	14,025	13.455	143	122	9,089	9,419	27,212	26,462
Miami	11,289	11,217	12,455	12,120	240	242	4,470	5,235	15,631	14,318
Monroe	5,965	5,171	9.786	10,440	62	77	14,230	12,536	5,344	6,605
Montgomery	16,143	15,797	17,048	16,048	255	240	3,535	2,685	20,618	17,230
Morgan	5,571	5,087	11,128	11,813	52	49	54,892	51,736	5,874	6,525
Morrow	7,561	7,342	11,562	11,782	50	54	54,854	53,120	13,457	16,357
Muskingum	10,627	10,075	21,363	22,069	201	162	82,945	75,336	13.390	14,817
Noble	4,626	4,532	10,400	11,436	44	45	40,047	41,233	7,417	8,684
Ottawa	5,428	5,333	7 634	7,396	20	10	6,014	4 822	9,335	10,492
Paulding	4,640	4,826	5,345	5,016	50	42	5,242	4,559	10,488	8,009
Perry	6,301	5,973	12,399	11,870	115	116	27,715	24,339	9,269	10,243
Pickaway	10,502	10,283	17,737	17,210	287	273	9,969	8,777	27,742	20,297
Pike	4,317	4,161	5,131	4,595	253	207	5,909	3,896	6,828	6,680
Portage	8,444	8,264	17,033	18,076	93	97	25,332	23,607	7,321	7,409
Preble	9,518	9,498	13,330	13,199	240	237	7,144	5,741	23,880	21,983
Putnam	8,821	8,566	13,531	13,267	74	78	10,230	8,759	33,347	31,582
Richland	9,030	8,715	13.903	13,291	151	147	34,266	32,842	20,097	21,619
Ross	12,152	11,347	16.916	16,918	182	203	11,387	11,220	24,892	21,579
Sandusky	9,182	8,292	12,386	11,205	78	60	16,783	14,014	22,233	22,255
Scioto	5,312	5,227	7,995	7,678	787	774	2,341	1,727	8,289	6,992
Seneca	9.386	9,505	15,483	15,100	90	89	32,004	30,827	33,435	34,654
Shelby	8,610	8,371	14,159	13,195	110	98	6,814	6,172	18,974	20,320

TABULAR STATEMENT

EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED TO THE AUDITOR OF STATE'S OFFICE BY THE SEVERAL COUNTY AUDITORS FOR THE YEARS 1896 AND 1897.

Counties.	Number of horses.		Number of cattle.		Number of mules.		Number of sheep.		Number of hogs.	
	1896.	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.	1897.
Adams	4,927	4,670	8,354	7,852	228	189	8,533	7,421	11,600	10,908
Allen	9,174	8,894	12,151	12 345	98	103	16,676	14,365	25,017	20,352
Ashland	7,045	6,698	12,317	11.942	58	56	28,266	27,790	14,881	16,419
Ashtabula	10,960	10,424	23,855	23,961	43	42	20,201	17,797	5,993	5,547
Athens	5,063	4,918	9,175	9 761	177	165	34,310	33,264	4,360	4,715
Auglaize	8,883	8,648	13.265	12.692	175	171	10 907	8,580	22,524	22,982
Belmont	9.239	8,755	17,055	17,429	386	375	62,292	60,908	10,375	12,270
Brown	7,014	7,214	10,617	10,843	238	210	9,611	9,579	21,867	22,370
Butler	11,349	10 841	12,842	13,096	537	482	7 721	5,745	18,642	19,288
Carroll	5,189	4,732	11,067	10,961	75	73	58,566	53,090	8,316	10,139
Champaign	11,301	10,512	13,955	14,058	164	153	21,431	23,322	22,837	25,025
Clark	11,661	11,690	14,729	14,758	213	211	27,624	26 669	21,225	22,947
Clermont	7.292	7,351	9,624	8,950	645	604	7,208	5,629	14,597	16,521
Clinton	9,773	9.576	12,538	12,010	354	328	23,751	19,615	29,279	32,183
Columbiana	9,567	9,494	17.705	18 243	87	77	33,974	30,962	11,175	11,433
Coshocton	7,524	7,618	14,376	13,952	110	103	75,820	71,824	13,897	15,686
Crawford	8,406	8,374	14,353	14,370	86	67	41,043	36,786	27,992	32,509
Cuyahoga	19,931	9,656	15,293	14,892	129	30	6,348	6,055	3,160	2,654
Darke	15,061	14,373	19,694	19,041	403	344	5,793	5,219	33,085	34 423
Defiance	6.671	6,559	9 782	9,299	87	82	12,063	10,926	14,229	11,411
Delaware	8,400	7,578	13.283	13,710	63	55	41,644	39,259	18,517	21.128
Erie	5,600	5,553	6,800	7,057	26	17	12,890	11,343	8,471	8,024
Fairfield	9,807	9,562	16.793	16,400	120	129	13,993	12,714	26,493	30,043
Fayette	9,763	9,600	13,502	15,298	198	179	13,498	11 285	32,360	31,705
Franklin	15,862	15,551	16,972	17,459	131	121	10,838	10,221	22,814	22,639
Fulton	7 376	6,562	12,548	11,029	30	18	20,473	19,490	19,793	17,300
Gallia	5,315	4,902	9,237	8,794	246	264	13.946	13,684	7,678	7,724
Geauga	5,821	5,707	16,067	17,103	55	39	14 709	14,508	4,322	4,076
Greene	10,918	10,532	14,508	13,926	191	191	18,342	14,547	22,009	21,469
Guernsey	6,079	6,390	11 919	12,938	191	240	63,368	60,533	7,976	9 100
Hamilton	19,527	18,800	18,595	18,421	1,448	1,359	2,620	2,033	10,278	10.800
Hancock	10,913	10,612	18,689	18,429	105	94	33,887	30,595	31,991	30,747
Hardin	8 177	7,646	12,067	12,629	155	129	20,873	27 339	22,737	24 793
Harrison	5.274	1,943	9,944	10,642	42	49	92,134	89,339	6,180	7.148
Henry	6,891	6,683	11.380	11,388	77	72	8,318	7,438	15,928	16,778

AGRICULTURAL STATISTICS

GATHERED BY ASSESSORS IN MAY, 1897, AND REPORTED TO THE SECRETARY OF STATE BY COUNTY AUDITORS.

WHEAT, RYE AND BUCKWHEAT.

Counties.	Wheat.			Rye.			Buckwheat.	
	Acres sown, 1896.	Bushels produced, 1896.	Acres sown, 1897.	Acres sown, 1896.	Bushels produced, 1896.	Acres sown, 1897.	Acres sown, 1896.	Bushels produced, 1896.
Adams	24,234	97,769	21,213	546	2,410	1,226	4	42
Allen	33,828	318,955	29,316	1,435	6,242	594	53	602
Ashland	34,458	274,753	43 308	585	4,951	1,386	306	4,508
Ashtabula	13,027	69.913	10.989	1,504	6,214	889	3,757	71.929
Athens	17,168	191,676	14,152	510	2,606	299	37	506
Auglaize	40,491	365,547	34,279	1,165	4,709	576	323	4,909
Belmont	29,348	331,471	27,110	2,083	17,825	1,250	137	2,017
Brown	30.113	94,296	22,301	1.755	4,432	3,078	12	87
Butler	41,930	258,458	50,207	369	1,800	483	62	1,097
Carroll	15,491	138,622	15,673	532	3,074	570	232	3,071
Champaign	45,020	275,079	42,197	829	1,815	615	76	1,171
Clark	37,742	319,384	35,889	3,716	11,732	1,411	30	196
Clermont	21,690	49.276	15,579	2,622	4,011	2,279	22	231
Clinton	35,395	105,842	31,764	645	2,269	1,036	125	935
Columbiana	23,442	220.331	22,317	990	3,648	700	281	5,019
Coshocton	31,481	131,234	27.150	2,005	11,619	2,638	448	6,025
Crawford	25,753	195,698	25,590	400	1,235	322	143	2,241
Cuyahoga	10,184	79,742	8,087	861	9 038	891	21	315
Darke	73,701	572,758	59,913	3,118	15,950	1,687	212	2 228
Defiance	31,105	284,279	22,628	1,456	6,183	430	236	2,166
Delaware	16 204	62.604	14,102	881	1,880	395	163	1.426
Erie	16,836	182,373	17,037	1,535	12.477	1,106	662	11.342
Fairfield	42,668	222,234	42,760	1,150	7,189	1,389	60	762
Fayette	29,764	105,151	35,170	392	5,466	926	17	385
Franklin	32,384	70,477	33,873	1,088	4,271	1,795	169	2 469
Fulton	28,263	322,780	24,320	1,608	16,193	1,215	593	8.119
Gallia	24,981	206 417	21,078	188	1,403	311	20	272
Geauga	8,433	59,990	7,671	392	2,415	402	350	6.988
Greene	43,490	37,382	42.658	1,499	4.091	681	32	468
Guernsey	20,646	192,155	18.134	619	4,073	864	233	2,880
Hamilton	10.888	48,290	14,401	729	3,460	2,184	60	674
Hancock	50,359	401,044	43,319	1,304	6,173	556	78	1,009
Hardin	29,807	219,319	31.846	511	2,825	393	91	1.330
Harrison	17,286	159,966	13,661	402	1,501	306	99	1,118
Henry	52,471	464,426	31,343	4.669	67,203	2,951	220	3 131
Highland	43,269	141,729	37,769	1,131	4,778	2,656	33	508
Hocking	14,660	200 905	14.148	302	1,740	367	209	2,830
Holmes	29,217	147.498	29,082	1,156	6,322	1,601	419	4,256
Huron	31,038	300,953	30,543	719	3 697	485	248	4,465
Jackson	14.853	109,462	12,951	108	1,036	210	81	1,129
Jefferson	16,958	243,564	16,355	589	4,814	442	68	997
Knox	35,810	166,459	31,374	1,928	7,931	2,658	646	10.182
Lake	5,614	56,076	5,011	1,145	12,884	783	178	2.895
Lawrence	11,649	51,028	7,133	296	615	140	48	307
Licking	36,439	188,523	31,183	3,329	22,547	5,545	717	9,928
Logan	36,218	218,496	27,604	1,345	5,015	588	192	2,385
Lorain	20,868	173·616	18,672	322	5.179	406	42	1,092
Lucas	12,080	196,192	12 536	2,784	24,206	1,700	739	10,028
Madison	21,062	48,078	24,337	1,104	3,008	817	19	278
Mahoning	15,580	119,012	23,982	539	2,646	923	358	5,135
Marion	20,850	136,513	24,782	477	1,288	376	34	343
Medina	22,548	119,134	21,655	684	6.383	1,332	202	4.439
Meigs	24,013	229.454	19,706	469	1,876	377	22	242
Mercer	40.543	360,080	32,868	2,231	16,239	1,246	187	1,909

WHEAT, RYE AND BUCKWHEAT—Concluded.

Counties.	Wheat.			Rye.			Buckwheat.	
	Acres sown, 1896.	Bushels produced, 1896.	Acres sown, 1897.	Acres sown, 1896.	Bushels produced, 1896.	Acres sown, 1897.	Acres sown, 1896.	Bushels produced, 1896.
Miami	48,768	565,799	46,818	1,196	9,198	593	42	261
Monroe	25,090	219,341	21,752	1,136	13,562	1,056	424	5,475
Montgomery	39,718	373,714	41,322	810	5,062	773	29	180
Morgan	21,485	256,094	15,207	744	5,232	367	91	1,352
Morrow	17,800	155 373	19,411	1,396	4,998	723	95	1,251
Muskingum	32,647	289,245	27,372	1,866	15,952	1,405	52	607
Noble	23,837	175,716	16,959	664	4,830	354	52	732
Ottawa	17,170	189,782	17,299	1,077	9,734	649	38	759
Paulding	25,390	205,530	14,642	1,482	8,802	438	111	1,700
Perry	19,333	233,332	17,511	806	5,701	423	114	1,579
Pickaway	47,590	167,063	54,902	940	3.216	1,061	251	42
Pike	17,355	138,219	16,139	145	968	274	100	1,402
Portage	20,415	130,141	18.274	1,009	5,328	1,147	554	12,327
Preble	46,620	459,883	42 214	957	5,216	621	11	163
Putnam	46,583	444,928	35,421	1,401	11,088	465	87	1,933
Richland	35,018	316,239	34,356	1,191	7,031	1.346	188	3,138
Ross	44,781	328,800	45,748	1,472	6,695	1,846	94	1,393
Sandusky	38,243	472,128	38,409	978	8,805	922	189	2,074
Scioto	15,629	152,346	16,219	192	652	159	103	1,723
Seneca	54,033	470,361	49,547	384	1,061	270	72	1,006
Shelby	42.173	321,904	36,228	788	5,727	468	312	4,777
Stark	47,266	299.291	45,890	716	3,944	975	199	3,329
Summit	24,824	241 912	24,248	865	4,571	599	235	3,761
Trumbull	15.344	55,433	11,317	1,024	3,018	797	1,220	24,074
Tuscarawas	32,071	201,480	29,756	865	5 005	949	333	4,694
Union	16,207	41,869	20,448	687	1,470	455	209	2,327
Van Wert	40,661	455,580	30,265	2,801	20,510	750	56	795
Vinton	12,425	88,650	9,092	383	1,319	558	113	1,455
Warren	27,360	44,267	27,663	535	1 665	1,267	49	579
Washington	36,968	425,406	30,384	1,035	13,763	1,538	176	2.492
Wayne	49,407	306,584	45,961	506	1,785	480	156	2,662
Williams	29,604	221,835	22,769	2,591	9,376	976	116	1,946
Wood	40,859	505,318	36,169	1,441	15.124	592	199	3,052
Wyandot	28,340	221,762	26,160	860	2,545	390	56	801
Totals	2,574,364	19.511,788	2,358 599	99 639	617,544	85,175	19,932	310.859

BARLEY, CORN AND OATS.

Counties.	Barley.			Corn.			Oats.		
	Acres sown, 1896.	Bushels produced, 1896.	Acres sown, 1897.	Acres planted, 1896.	Bushels (shelled) produced, 1896.	Acreage planted (estimated), 1897.	Acres sown, 1896.	Bushels produced, 1896.	Acres sown, 1897.
Adams	....	....	19	40,659	1,156,639	40 056	4,601	77,689	4,506
Allen	74	1,662	138	37,564	1,538.141	35,829	14,352	401,856	11,847
Ashland	818	3,222	276	37,281	968,200	23,592	17,819	571,221	17.988
Ashtabula	134	1,489	80	16,488	558.988	13,414	24,557	870,931	22,252
Athens	....	....	....	18,040	515,263	15,742	2,641	58,611	2.219
Auglaize	1,008	21,324	440	43 803	2,012,775	41,043	16,034	509,627	14,135
Belmont	173	1,547	139	26 367	1,123,655	24.526	10,740	228,195	9,720
Brown	8	40	....	50.851	1,413,209	48,901	7,500	117,588	7,772
Butler	5,985	56,595	2,322	58,652	2,855,940	50,225	20,474	584,500	11,249
Carroll	2	76	3	14,820	612,753	13,731	14,194	403,262	13,708
Champaign	40	430	40	60,811	2,748,826	54,544	14,924	389,235	11,327
Clark	439	1,247	88	57,868	2,419,539	47,968	9,855	224,295	6,841
Clermont	....	....	....	41,032	1 094,808	38,375	10,415	157,480	11,766
Clinton	414	338	211	63,371	2,902,243	59,414	7,653	183,517	4,809
Columbiana	12	345	31	20,008	797,793	18 209	20,970	651,654	21,086
Coshocton	3	125	9	28,353	1,026,726	26,355	12,586	285,635	11,318
Crawford	245	5,827	296	34,553	1,375,642	33,832	21,253	769,408	21,043
Cuyahoga	21	51	26	10,314	322,106	9,353	14,819	560,811	14,832
Darke	1,968	32,088	734	86,924	4,238,209	82,033	24,319	690,847	19,549
Defiance	573	18,594	1,420	27,972	1,235,429	27,822	19,079	417,897	17,113
Delaware	....	25	16	45,590	1,757,653	38,954	19,372	522,712	14,267
Erie	828	13,394	977	19,067	708,363	23,093	13,098	418,318	12,585
Fairfield	176	2,144	16	56,663	2,241,576	50,828	10,779	227,403	5,639
Fayette	50	....	14	68,686	2,937,730	52,683	6,396	156 590	2,248
Franklin	....	32	5	77,729	3,254,039	64,035	18,773	462,816	12,277
Fulton	300	5,118	293	31,258	1,230,188	27,667	20,411	632,212	17,237
Gallia	....	....	5	26,275	681,697	21.940	3,480	41,292	2,836
Geauga	9	63	19	10,136	357,722	8,903	13,904	526,633	14,354
Greene	391	225	76	58,420	3,535,217	51,379	10.412	282,940	4.425
Guernsey	18	1,063	75	21,444	780,770	20,160	8.617	174,673	8,143
Hamilton	813	7,056	404	22,168	868,988	17,467	8,373	194,096	4,823
Hancock	199	4,933	137	53,846	2.288,577	50,219	16,169	445,754	12,553
Hardin	12	....	....	44.648	2,055,035	36,874	19,060	492,936	9,624
Harrison	32	460	68	14,313	626,528	11,995	6,917	195,070	6,882
Henry	758	20,785	1,381	53,132	2,398,694	49,048	12,754	403 213	8.723
Highland	239	464	26	58,445	2,132,133	52,577	4 544	86 294	2,875
Hocking	....	97	2	17,691	520,207	16.932	2.713	58,315	2,967
Holmes	31	736	59	22,811	852,011	21,746	19,029	510,123	16,355
Huron	341	4,933	274	32,422	1,080,982	27,840	28,235	875,667	26,233
Jackson	4	....	....	16,589	432,923	15,632	2,429	40,613	2,223
Jefferson	58	1,817	169	16,657	649.499	14,969	11.669	307,222	11,879
Knox	367	211	9	35.081	1,420,425	28,829	14,414	379,608	12,389
Lake	847	690	59	6,534	227,714	5,681	7,003	239,411	7,453
Lawrence	....	48	....	18,196	426,023	18.761	4,402	43,048	4,949
Licking	4	....	....	17,090	601,094	14,795	17,715	673,217	19,033
Logan	806	1,811	324	43,485	2,030,260	39,344	15,283	401,431	10,246
Lorain	39	518	55	20,514	686,801	17,619	20,448	903,089	20,600
Lucas	382	8,461	272	19,857	880,480	17,534	15 020	393,298	10,842
Madison	62	60	12	87,154	3,916,307	81,337	11.149	214,235	7,555
Mahoning	4	230	14	57,451	2,434,464	53,258	14,156	292,377	13,770
Marion	72	460	47	45,548	2,080,057	42,657	20,446	636,250	20,409
Medina	12	57	9	23,092	817,701	20,518	21,467	760,348	23,241
Meigs	75	1,000	67	17.043	509,077	14,448	3,270	69,601	2.969
Mercer	1,433	26,828	409	46,201	1,989.803	46,137	23,989	703,071	20,960
Miami	809	12,296	940	52,242	2,705,212	49,867	18 515	553,379	13.988
Monroe	4	....	....	19,397	596,458	27,314	8.043	141.484	8,068
Montgomery	1,103	14,026	311	53,243	2,642,318	46,278	18 002	463,801	12,702
Morgan	29	41	42	17,875	662.452	15,995	4.014	77,174	2,801
Morrow	29	84	....	27,541	1,007,102	25,813	16,789	540,871	14,284
Muskingum	85	1,459	47	32,198	1,268.634	29,672	10,158	202,956	8,216
Noble	9	50	7	18,477	688,186	21 222	5 271	101,641	4.391
Ottawa	2,163	61,266	2,372	20,358	921,456	18,578	11,314	310,856	9,982
Paulding	298	6,611	2,452	36,444	1.581,195	37,106	10,456	263,481	8,895
Perry	34	80	12	19,988	1,246,476	18,533	3,221	68.025	2,018
Pickaway	65	....	31	92,034	4,020,015	84,324	6,421	155,121	2,305
Pike	....	....	....	27,627	1,030.174	25,177	3,083	47 597	3,226
Portage	25	156	11	18,282	637 373	15,785	21,738	810,075	22,485

BARLEY, CORN AND OATS—Concluded.

Counties.	Barley.			Corn.			Oats.		
	Acres sown, 1896.	Bushels produced, 1896.	Acres sown, 1897.	Acres planted, 1896.	Bushels (shelled) produced, 1897.	Acreage planted (estimated), 1896.	Acres sown, 1896.	Bushels produced, 1896.	Acres sown, 1897.
Preble	1,108	8,087	113	55,955	2 616,078	51,493	14,496	369,609	12,331
Putnam	444	9,386	903	56,302	2,398,700	51,659	8 263	218.941	6,015
Richland	643	7,412	294	29,008	1,089,980	27,069	24,156	759,198	21,693
Ross	64	15	37	73,727	3,160,790	65.127	5,615	121,517	3.376
Sandusky	411	4,566	466	39,970	1,496,354	36,425	18,393	580,198	14,517
Scioto	38	500	30	23,435	644,455	21,701	5,425	98,342	4,406
Seneca	136	151	6	44,901	1,891,697	42,098	21,845	778,999	21,136
Shelby	1,297	33,949	555	47.687	2.206,410	43,424	28,837	621,071	20.220
Stark	68	899	50	33,436	1,434,023	30,988	31,901	1,137,122	49,098
Summit	19	450	23	21,021	791,030	18,264	20,662	759.733	17.613
Trumbull	5	16	8	7,565	640,269	14,404	24,726	940,600	24.711
Tuscarawas	20	51	42	23,991	864,204	22,354	20,060	554,621	19,844
Union	....	....	....	52,284	2,260,187	46,706	21,551	503,789	13,912
Van Wert	633	10,410	1,730	47,975	2,046,000	48,030	13,740	334,965	13,545
Vinton	7	....	....	13,721	364,855	13,076	2,336	40,745	1,736
Warren	1,330	9,934	642	48 347	3,749,484	44,889	12,299	399,821	9,525
Washington	....	301	7	24,232	701,817	23,476	9,646	208,637	9,312
Wayne	124	689	144	37,836	1,533,031	35,091	28,301	1.030,683	27,427
Williams	350	10,164	586	25,259	1.045,812	24,628	22,460	578.117	19.828
Wood	903	21,091	1,039	70,365	2,861,704	69,206	41,521	825,611	27,975
Wyandot	31	....	....	36,641	1,564,721	35,093	14,967	510,549	11,016
Totals	32,563	462,859	24,465	3,230,331	134,796,274	2,961,688	1,262,906	36,027,464	1,091,239

CLOVER AND POTATOES.

Counties.	Clover.				Potatoes.		
	Acres grown, 1896.	Tons of hay produced, 1896.	Bushels of seed, 1896.	Acres plowed under for manure, 1896.	Acres planted, 1896.	Bushels produced, 1896.	Acres (estimated) for crop of 1897.
Adams	4,213	1,160	1,585	483	427	41,607	317
Allen	689	350	361	28	1,162	96,243	829
Ashland	10,003	9,795	3,726	441	1,345	110,031	1,119
Ashtabula	3,681	4,041	285	220	4,126	387,018	2,647
Athens	341	400	35	2	825	63,707	413
Auglaize	1,994	1,967	255	51	1.506	145,105	1,342
Belmont	2,171	2,078	422	101	1,365	71,118	1,030
Brown	2,334	653	270	242	1,548	91,901	813
Butler	8,994	2,057	1,751	2,423	1,978	192,155	1,625
Carroll	1,006	826	624	20	904	112,880	744
Champaign	3,501	1,813	229	1,239	1,113	95,268	873
Clark	4,855	2,337	514	991	1,439	114.023	996
Clermont	3,492	905	179	513	2,408	124.647	1,980
Clinton	7,721	3,251	2,487	710	1,136	80,926	520
Columbiana	3,000	3.377	328	59	2,376	265,009	1,878
Coshocton	2,940	2,527	1,540	85	1,233	123,641	981
Crawford	5,384	5,346	3,459	143	1,644	134,246	1,378
Cuyahoga	1,950	2,626	58	138	6,212	492,300	5,012
Darke	7,116	1,194	700	1,595	3,366	251,336	2.280
Defiance	3,453	1,333	2,317	389	1,263	105 928	1,177
Delaware	3,340	3,003	678	109	953	49,222	761
Erie	3,324	2,946	1,488	534	3,295	313,530	2,548
Fairfield	6,901	4,205	1,289	487	2,550	137,465	1,553
Fayette	2,520	894	638	799	189	17.240	83
Franklin	4,229	3,211	602	827	2,760	119,545	2 393
Fulton	2,481	2,681	3 236	237	1,550	112,681	1,268
Gallia	1,357	952	372	195	567	34.002	349
Geauga	2,173	2,735	242	178	2,863	303.396	2,159
Greene	6,715	1,995	821	1,647	1,198	95,699	891
Guernsey	772	672	242	8	620	52,423	509
Hamilton	1,800	1,048	194	490	5,377	456,580	4,775
Hancock	3,239	1,923	2,526	70	1,590	117,174	1,455
Hardin	940	334	214	73	3,483	125,952	2,346
Harrison	1 286	1,219	716	....	544	31,475	462
Henry	4.962	1,935	2,663	609	1,383	93,829	1,183
Highland	2,340	883	1,548	159	760	59,551	385
Hocking	1,385	895	302	172	859	76,213	1.025
Holmes	11.843	12,084	6,177	246	1,149	114,280	1,037
Huron	7,753	7,175	3,076	291	2,085	168,806	1,694
Jackson	705	141	......	117	498	45,390	338
Jefferson	2,898	3,036	1,689	95	1,219	96,305	1.021
Knox	6,933	7,242	3,565	320	1,046	103,199	639
Lake	776	989	60	83	1,505	186,031	1,139
Lawrence	2,112	507	107	234	612	42,400	546
Licking	4,862	4,802	1,248	375	2,195	170,258	1,809
Logan	862	496	207	144	1,002	63,674	669
Lorain	4,105	4,689	638	406	2,484	210,742	1,875
Lucas	1,864	2,081	1,059	213	3,177	335,961	2,927
Madison	4,802	2,618	902	1,233	418	32,803	403
Mahoning	3,139	3,153	360	42	2,140	260 534	1,572
Marion	3,899	3,614	1,980	114	1,302	90,626	1.133
Medina	5,545	5,316	1,473	45	2,229	237,196	1,924
Meigs	1,292	595	36	304	1,434	92,278	882
Mercer	733	757	237	2	1,216	94,787	1,018
Miami	7,800	961	482	1,120	1,981	180,909	1,437
Monroe	527	279	33	79	1,305	77,965	1,233
Montgomery	7,163	2,041	888	2,672	2,063	189,518	1,651
Morgan	950	855	166	78	626	58,963	495
Morrow	8,346	8,205	2,350	189	1,270	92,307	1,121
Muskingum	2,726	2,617	587	201	1,468	114,463	1,247
Noble	356	285	28	18	707	45,793	486
Ottawa	3,427	2,186	1,635	178	984	50,535	838
Paulding	3,145	486	513	187	1,061	85,738	863
Perry	2,244	1,005	967	41	1,005	86,165	795
Pickaway	8,605	2,595	1,579	2,126	958	63,625	757
Pike	3,343	943	588	756	760	63,156	592
Portage	5,024	5,384	945	234	6,029	637,293	4,665

CLOVER AND POTATOES—Concluded.

Counties.	Clover.				Potatoes.		
	Acres grown, 1896.	Tons of hay produced, 1896.	Bushels of seed, 1896.	Acres plowed under for manure, 1896.	Acres planted, 1896.	Bushels produced, 1896.	Acres, (estimated) for crop of 1897.
Preble	19,939	2,318	1,307	6,182	1,134	106,609	851
Putnam	1,425	955	793	430	1,344	133,975	1,351
Richland	10,244	12,199	4,248	469	1,981	237,819	1,418
Ross	8,700	2,135	1,709	2,842	1,156	107,610	1,065
Sandusky	5,827	6,562	3,503	568	2,263	188,396	1,747
Scioto	2,764	1,162	565	719	1,145	103,940	893
Seneca	6,069	3,438	3,412	311	2,724	148,827	1,445
Shelby	4,541	336	288	367	1,250	109,525	975
Stark	10,461	10,351	1,866	418	4,577	412.341	2,852
Summit	4,705	5,198	655	178	2,893	287,431	2,505
Trumbull	4,511	5,607	511	252	3,154	453,529	2,208
Tuscarawas	3,341	3,262	1,654	79	2,477	247,624	2,088
Union	2,132	1,763	608	156	637	35 317	545
Van Wert	3,735	585	380	250	1,071	86,270	1,005
Vinton	678	258	19	35	616	51,432	491
Warren	9,714	1,928	896	2,527	1.315	162,799	754
Washington	1,755	755	171	166	2,079	117,174	1,649
Wayne	15,078	17,941	5,637	361	2,787	274,178	2,242
Williams	3,884	3,588	4,621	83	1,024	70.573	1,081
Wood	4,640	3,277	4,032	441	2,897	103,283	1,169
Wyandot	2,939	2,185	1,864	96	982	80,716	835
Totals	373,463	252,507	111,210	45,540	153,362	12,906.134	118,074

FLAX, TOBACCO AND SWEET POTATOES.

Counties.	Flax.			Tobacco.		Sweet potatoes.	
	Acres sown, 1896.	Bushels of seed, 1896.	Pounds of fibre, 1896.	Acres planted, 1896.	Pounds produced, 1896.	Acres planted, 1896.	Bushels produced, 1896.
Adams	......	......	......	1,861	1,307,617	24	3,073
Allen	35	185	......	......	......	4	200
Ashland	2,146	12,848	986,550	317	4,800	3	327
Ashtabula	49	502	3,300	......	......	......	......
Athens	......	......	......	11	6,010	8	812
Auglaize	......	......	......	9	7,880	5	41
Belmont	......	......	......	1,673	1,306,728	8	932
Brown	......	......	......	3,349	2,522,900	60	2.334
Butler	95	500	......	592	371,920	31	3,860
Carroll	......	......	......	......	......	2	144
Champaign	8	60	......	20	16,474	11	1,150
Clarke	20	......	......	184	121,737	26	2,295
Clermont	......	......	......	1,709	1,301,950	92	5,188
Clinton	......	......	......	21	76,500	31	947
Columbiana	......	......	......	......	......	......	18
Coshocton	......	......	......	......	......	......	167
Crawford	362	2,195	8,000	......	......	2	215
Cuyahoga	8	60	......	......	......	......	......
Darke	53	188	......	3,893	2,700,049	82	6.354
Defiance	1	10	......	4	3,400	16	379
Delaware	22	90	......	......	......	......	10
Erie	......	......	......	......	100	14	1 456
Fairfield	......	......	......	1	200	85	1,420
Fayette	......	......	......	......	30	......	74
Franklin	......	......	......	......	20	10	299
Fulton	17	128	......	......	......	5	583
Gallia	1	5	......	642	475,400	16	1,759
Geauga	60	336	5,006	......	......	......	......
Greene	63	266	......	126	79,650	1	100
Guernsey	1	8	......	298	252,635	3	106
Hamilton	......	......	......	136	174,120	142	11,651
Hancock	27	152	......	......	......	1	98
Hardin	20	200	......	......	......	4	237
Harrison	......	......	......	......	80	2	97
Henry	1	5	......	......	......	4	126
Highland	2	51	......	16	9,570	11	816
Hocking	1	4	......	3	550	40	2,618
Holmes	......	......	......	......	......	......	80
Huron	802	6,469	250,680	......	......	2	48
Jackson	......	......	......	......	......	14	1,580
Jefferson	1	5	......	......	192	1	113
Knox	10	40	......	......	......	......	20
Lake	......	......	......	2	2,000	......	......
Lawrence	......	......	......	38	23,700	174	23,542
Licking	......	......	......	......	......	3	397
Logan	37	250	......	3	31,048	21	458
Lorain	297	2,148	41,500	......	......	6	770
Lucas	9	90	......	......	100	3	190
Madison	......	......	......	......	......	1	187
Mahoning	125	487	7,000	......	......	......	11
Marion	16	84	......	......	......	......	43
Medina	200	7,611	121,200	81	110,450	......	5
Meigs	......	......	......	14	10,025	19	2,170
Mercer	6	33	......	......	......	10	380
Miami	52	275	22,000	1,426	1,126.102	41	2.433
Monroe	4	36	......	1,756	1,496,205	6	463
Montgomery	7	48	100	8,875	5,227,139	50	4,420
Morgan	......	......	......	222	153,525	41	2,903
Morow	20	95	......	......	32	1	31
Muskingum	......	......	......	11	9,200	54	7,382
Noble	......	......	......	1,550	1,321,737	4	340
Ottawa	......	......	......	......	......	2	100
Paulding	14	95	......	1	620	5	273
Perry	......	......	......	......	......	16	1,220
Pickaway	......	......	......	......	40	1	80
Pike	......	......	......	35	27,900	3	214
Portage	95	633	56,400	......	50	......	16

FLAX, TOBACCO AND SWEET POTATOES—Concluded.

Counties.	Flax.			Tobacco.		Sweet potatoes.	
	Acres sown, 1896.	Bushels of seed, 1896.	Pounds of fibre, 1896.	Acres planted, 1896.	Pounds produced, 1896.	Acres planted, 1896.	Bushels produced, 1896.
Preble	44	232	......	2,739	1,838,148	26	3.127
Putnam	......	......	......	......	70	2	575
Richland	857	4,900	275,400	......	......	2	119
Ross	......	......	......	8	5,450	22	292
Sandusky	......	......	......	......	......	41	400
Scioto	46	28	......	279	237,160	23	1,824
Seneca	27	202	10	......	......	......	50
Shelby	30	111	......	20	17 000	19	966
Stark	17	20	......	......	......	5	637
Summit	......	......	......	......	......	......	148
Trumbull	325	1,792	165,700	......	......	......	8
Tuscarawas	......	......	......	2	300	1	91
Union	......	......	......	......	125	......	115
Van Wert	......	......	......	......	......	3	120
Vinton	2	30	......	1	25	8	708
Warren	......	......	......	2,318	1,506,088	17	1,331
Washington	......	......	......	232	124,613	205	36,821
Wayne	569	3,948	275,300	145	186,825	5	671
Williams	......	......	......	......	......	5	654
Wood	10	150	......	......	......	2	120
Wyandot	......	......	......	......	......	......	......
Totals	6,614	47,605	2,218,146	34,608	24,196,189	1,607	148,532

MILK, BUTTER, CHEESE AND BROOM CORN.

Counties	Milk.	Butter.		Cheese.		Broom corn.	
	Gallons sold for family use, 1896.	Pounds made in home dairies, 1896.	Pounds made in factories and creameries, 1896.	Pounds made in home dairies, 1896.	Pounds made in factories and creameries, 1896.	Acres planted, 1896.	Pounds broom brush produced 1896.
Adams	7,212	409,725	.....	.....	.....	1	500
Allen	208,400	511,490	38,450	13,870	.....	.....	.....
Ashland	40,763	439,274	32,210	21,500	113.200	6	3,110
Ashtabula	779,149	930,541	445,199	23 000	2,244,273	.....	.....
Athens	79,864	460 566	2,000	2,330	.....	.....	.....
Auglaize	86,800	478,251	72,100	980	.....	117	90,100
Belmont	502,480	727,692	81,032	11,519	.....	83	5,008
Brown	130,856	549,320	.....	.....	.....	2	550
Butler	707,950	626,821	4,000	16,670	.....	63	33,000
Carroll	89,758	499,962	25.750	565	37,060	.....	.....
Champaign	395,939	474,946	88,750	23,300	.....	.....	.....
Clark	492,955	625.712	18,939	725	.....	.....	.....
Clermont	231,317	672,923	.....	.....	.....	.....	.....
Clinton	51,275	352,017	14,760	650	.....	.....	.....
Columbiana	718,855	752,426	319,325	54,582	413.191	1	350
Coshocton	168,430	573,220	800	60,250	12,000	.....	.....
Crawford	84,290	535,018	32,060	200	.....	.....	.....
Cuyahoga	3,845,658	699,803	10,500	4,950	157,650	.....	.....
Darke	181,813	940,496	1,190	2,560	.....	21	17,022
Defiance	56,285	450,455	27,075	50	.....	15	200
Delaware	12,045	619,122	153,161	50	.....	.....	.....
Erie	220 811	339,001	119,574	37,300	24,000	144	10,600
Fairfield	37,751	735,865	1,550	145	.....	3	145,250
Fayette	22,127	205,701	.....	.....	.....	.....	300
Franklin	1,504 658	870,679	196,940	.....	.....	63	6,000
Fulton	40,531	573,143	91,123	850	1,377,849	5	2,000
Gallia	85,609	429,179	13	.....	80	9	3,600
Geauga	4,295,979	489,904	727,040	100	2,857,680	11	1,400
Greene	91,140	568,245	.....	2,500	.....	14	4,000
Guernsey	41,935	542,877	93,840	510	.....	.....	.....
Hamilton	3,353,482	649,575	11,275	6,165	.....	5	1,300
Hancock	230,825	809 097	150	800	.....	24	3,000
Hardin	60,51	426,559	26,675	675	.....	.....	310
Harrison	1,890,893	457 333	160,080	500	.....	.....	.....
Henry	15,553	545,781	50,999	.....	.....	9	4,550
Highland	51,252	508,662	.....	1,210	.....	.....	.....
Hocking	4.300	363,765	.....	.....	.....	1	450
Holmes	307,220	481.035	36,980	6,980	678,234	.....	.....
Huron	200,718	705,037	48,657	22,775	151.260	.....	.....
Jackson	6,749	289,475	.....	175	.....	.....	.....
Jefferson	165,802	591,922	39,464	.....	17,000	.....	.....
Knox	99,233	739,040	56,544	20,100	.....	.....	.....
Lake	739,815	353,732	.....	.....	.....	.....	.....
Lawrence	37,475	247,290	.....	675	.....	4	2.427
Licking	183,019	1,075.361	.....	.....	500	15	8,010
Logan	57,725	478,641	151,059	4,586	.....	.....	.....
Lorain	1,029,105	643,942	270,049	96,331	1,326,898	.....	.....
Lucas	1,024 087	396.263	22.110	.....	.....	8	5,000
Madison	25,400	327,277	11.000	.....	.....	.....	.....
Mahoning	650,307	763,004	941,397	6,200	538,800	.....	.....
Marion	147,190	390,938	.....	.....	.....	.....	5,639
Medina	181,533	898,921	65,900	130,254	376,762	28	.....
Meigs	21.682	410,234	.....	3,585	.....	2	1,045
Mercer	58,541	380,129	85,000	1,120	26,000	287	3,000
Miami	240,531	641,635	8,000	18,650	.....	.....	.....
Monroe	35,415	455,550	7,396	43,002	308,448	56	145,400
Montgomery	1,184,710	813,756	.....	1,100	.....	.....	.....
Morgan	17,071	480,313	13,525	460	.....	.....	.....
Morrow	40,278	714,229	.....	.....	.....	.....	.....
Muskingum	246,440	791,624	19,815	.....	.....	1	500
Noble	310	503,087	7,900	1,950	.....	.....	.....
Ottawa	37,980	252,093	16,120	.....	.....	.....	.....
Paulding	11,725	274,875	.....	.....	.....	.....	.....
Perry	52,465	419,445	.....	.....	.....	.....	.....
Pickaway	84,620	363,076	6,030	.....	.....	.....	.....
Pike	6,255	178,603	.....	.....	.....	7	300
Portage	362,339	755,856	179,181	5,370	1,024,683	.....	.....

MILK, BUTTER CHEESE, AND BROOM CORN—Concluded.

Counties.	Milk.	Butter.		Cheese.		Broom corn.	
	Gallons sold for family use, 1896.	Pounds made in home dairies, 1896.	Pounds made in factories and creameries, 1896.	Pounds made in home dairies, 1896.	Pounds made in factories and creameries, 1896.	Acres planted, 1896.	Pounds broom brush produced 1896.
Preble	53,435	695,057	6,000	3,225	45,000	10	67,000
Putnam	30,630	389,159	94,887	27,380	....	1	700
Richland	315,008	613,088	150	2,795	3,000	2	1,460
Ross	78,021	341,269	....	....	8,000	....	....
Sandusky	147,675	510,180	84,100	....	....	....	....
Scioto	77,751	290,992	....	....	....	9	1,000
Seneca	168,640	697,699	27.716	2.350	....	1	700
Shelby	84,445	403,053	83,050	....	....	10	7,200
Stark	763,464	944,155	121,504	83,745	418,410	....	....
Summit	2,521,758	536,532	227,804	5,900	1,355,460	....	....
Trumbull	484,680	1,119,516	206,342	45,685	1,891;403	....	....
Tuscarawas	334,848	539,039	55,062	9 438	837,103	6	3,090
Union	144,460	523,020	287	500	....	9	7,850
Van Wert	35,150	402,060	14,530	....	....	....	....
Vinton	3,664	251,855	....	....	....	....	....
Warren	196,720	524,190	40	....	....	1	1,000
Washington	93,099	679,146	41,260	3,030	....	....	....
Wayne	507,636	1,004,352	16,785	45,498	122,186	....	50
Williams	42,270	554,981	121,035	....	6,100	....	....
Wood	230,363	842,521	31,340	200	....	....	....
Wyandot	32,365	401,616	26,200	2.000	30,000	....	....
Totals	34,421,273	48,925,009	5,990,779	883,565	16,102,230	979	593,971

SORGHUM, MAPLE AND BEES.

Counties.	Maple in 1897.			Bees.		Sorghum.		
	No. of trees from which sugar or syrup was made.	Pounds of sugar.	Gallons of syrup.	No. of hives, 1896.	Pounds of honey, 1896.	Acres planted, 1896.	Pounds of sugar, 1896.	Gallons of syrup, 1896.
Adams	6,794	85	1,463	850	4,875	71	...	5,706
Allen	21,684	5[illegible]0	4,669	1,339	7,520	72	79	5,397
Ashland	118,587	29,042	27.995	682	5,462	10	...	671
Ashtabula	253,169	84,806	37,341	1,442	58,526	...	...	...
Athens	3,510	51	378	284	2,286	12	...	1.243
Auglaize	17,218	103	4,279	791	5,430	183	10	18.730
Belmont	5,435	211	1,777	980	7,695	83	...	4,476
Brown	1,705	109	371	266	532	26	...	1,172
Butler	3,394	...	944	323	2,252	7	...	612
Carroll	738	...	348	254	432	34	...	2.337
Champaign	20,848	2,015	6,415	634	3,224	50	...	3,814
Clark	728	40	195	265	2,104	23	...	2,493
Clermont	1,390	106	209	216	1,615	35	150	1,265
Clinton	28,198	1,370	8,161	322	694	14	...	813
Columbiana	58,373	993	11,952	229	1,584	8	...	333
Coshocton	1,893	59	702	195	576	26	...	1,179
Crawford	29,483	1,766	6,030	541	3,972	24	...	2,108
Cuyahoga	75,866	10,676	15,178	352	5,209	...	...	...
Darke	15,739	86	3,341	1,102	6,466	262	...	21,059
Defiance	10,815	397	2,359	1,029	2,034	160	...	17,180
Delaware	44.922	795	10.409	212	571	45	...	2 393
Erie	13,325	4,085	2 972	318	3,199	9	28	565
Fairfield	11,876	518	2,890	368	1,249	49	...	2,491
Fayette	205	4	103	75	74	4	50	215
Franklin	2,531	...	769	465	1,822	19	...	819
Fulton	2,931	225	1,473	341	1,805	42	777	5,304
Gallia	105	...	50	350	2,014	81	35	11,391
Geauga	504,967	151,302	102,737	766	15,595	2	...	18
Greene	22,880	775	6,205	124	63	3	...	207
Guernsey	311	16	123	348	918	70	...	6,283
Hamilton	...	300	257	250	2,613	1	...	150
Hancock	42,696	328	9,774	1,448	14,180	39	...	2,810
Hardin	8,939	728	1,755	552	5,557	54	...	3,925
Harrison	1,773	30	1,158	231	734	15	...	1,152
Henry	2 928	...	841	284	3,434	77	...	7,426
Highland	10,085	348	2,814	219	367	25	125	1,842
Hocking	936	...	410	439	1,048	40	...	2,336
Holmes	8,397	1,352	2,900	452	3,822	27	...	867
Huron	72,792	17,934	15,184	934	18,609	44	...	3,125
Jackson	108	...	43	251	1 070	48	36	2,324
Jefferson	5.007	245	1,434	263	2,345	61	93	1,388
Knox	44,318	9,242	9,232	488	3,213	10	15	347
Lake	33,513	14,260	5,295	277	3,855	...	...	...
Lawrence	...	...	...	780	4,526	230	...	21,611
Licking	47,373	1,199	10,603	735	4,481	12	54	1,099
Logan	107,673	71,236	34,046	800	4,737	44	...	4,602
Lorain	93,108	37,486	17,103	443	7,624	45	...	2,245
Lucas	280	...	112	470	5,263	12	...	855
Madison	...	...	...	210	224	12	...	2,014
Mahoning	125,963	6,351	22,989	480	2,758	...	...	...
Marion	3,219	30	1,139	341	2,805	23	...	1,686
Medina	202,618	50,923	36,925	1,034	20,114	2	25	199
Meigs	260	50	42	308	1,163	25	...	1,159
Mercer	173	16	40	420	2,122	263	...	21,758
Miami	12,740	150	3,214	428	1,030	66	...	5,659
Monroe	1,165	519	191	689	2,251	280	...	15,587
Montgomery	15,266	...	4,128	301	922	51	...	4,697
Morgan	1,054	40	331	420	1,401	64	...	1,656
Morrow	82,380	6,804	21,885	345	4,170	12	...	1,308
Muskingum	798	22	286	892	3,684	13	...	898
Noble	415	125	113	445	1,606	126	...	6,875
Ottawa	175	10	58	357	10,277	1	...	45
Paulding	330	78	33	1.296	12,451	96	113	7,672
Perry	15,415	195	4,517	349	3,010	22	...	1,360
Pickaway	3,164	50	818	315	301	17	60	1,097
Pike	864	112	208	762	3,255	101	...	6,753
Portage	387,478	16,145	93,870	572	7,478	2	...	30

SORGHUM, MAPLE AND BEES—Concluded.

Counties.	Maple in 1897.			Bees.		Sorghum.		
	No. of trees from which sugar or syrup was made.	Pounds of sugar.	Gallons of syrup.	No. of hives, 1896.	Pounds of honey, 1896.	Acres planted, 1896.	Pounds of sugar, 1896.	Gallons of syrup, 1896.
Preble	16,963	225	3,253	417	2,072	53	15	6,393
Putnam	5,622	27	1,579	167	9,020	148	....	14,611
Richland	83,979	7,739	19,020	601	7,071	11	....	784
Ross	6,624	270	1,897	376	1,551	17	....	2,000
Sandusky	1,812	....	563	341	4,297	19	....	2,068
Scioto	238	....	42	653	6,188	85	70	6,809
Seneca	28,262	263	6,363	716	9,197	53	....	2,682
Shelby	15,146	30	1,329	570	2,218	178	....	15,525
Stark	44,382	700	9,155	520	3.273	20	....	1,958
Summit	87,544	14,180	14,528	357	2.952	....	....	....
Trumbull	226,833	20,354	42,054	618	8,036	7	....	430
Tuscarawas	3,342	182	994	440	1,986	25	....	1,018
Union	43,111	9,123	7,358	269	976	64	20	5,301
Van Wert	515	10	255	627	6.720	60	....	5,395
Vinton	553	245	193	234	1,455	26	....	1,977
Warren	6,706	88	2,167	205	1,150	4	....	303
Washington	775	....	367	385	1,039	75	....	3,385
Wayne	39,813	4,599	8,092	915	9,410	33	27	2.664
Williams	40,042	1,761	7,700	680	2 349	29	....	2,697
Wood	5,355	120	1,214	547	6,750	37	300	2,333
Wyandot	14,272	....	3,580	497	1.950	18	....	1,384
Totals	3,284,912	586,438	697,289	45,878	407,958	4,346	2,082	338,545

EGGS, GRAPES AND WINE.

Counties.	Eggs.		Grapes and wine.			
	Number dozens produced, 1896.	Number dozens shipped beyond state, 1896.	Acres new vineyard planted, 1896.	Whole number acres vineyard, 1896.	Pounds of grapes gathered, 1896.	Gallons wine pressed, 1896.
Adams	758,347	600		1	2,500	
Allen	790,882		1	33	114,940	4,155
Ashland	720.896			2	48.942	422
Ashtabula	706,150	200		1,076	5,771,689	
Athens	556.525				9,200	14
Auglaize	809,050			4	43,650	1,022
Belmont	784,922	1,348	4	117	411,877	3,949
Brown	881,775			7	12,510	460
Butler	674.090		1	34	44,830	1,245
Carroll	409,647	10,440	3		2,620	172
Champaign	573,150		6	17	23,310	212
Clark	564,194	200			79,631	3,871
Clermont	806,754	1,100	25	173	215,265	7,087
Clinton	537,545				800	10
Columbiana	771,253	26,630		3	7,365	230
Coshocton	852,364			4	10,900	813
Crawford	843,150	2,000	17		99,390	5,882
Cuyahoga	501.958	100	73	3,572	9,549 200	66,974
Darke	1,374,039	80	5	14	169,909	1,717
Defiance	677,954		3	66	68,985	8,016
Delaware	734,812	14,600	1	4	10,047	135
Erie	334.393	1,536	133	13,392	3,770,770	84,002
Fairfield	876,137	35,000	3	79	161,100	17,205
Fayette	377,664		1		680	
Franklin	855,791	10,000		115	28,400	1,494
Fulton	904 845	15		17	148,875	8,896
Gallia	628,314		3	5	1,800	40
Geauga	459 853	11	2	243	671,310	1,636
Greene	592,411		1	14	6,700	875
Guernsey	586,804	130,730	1	2	13,250	95
Hamilton	429,418		30	162	198.046	8,618
Hancock	851,711			19	105,097	2,669
Hardin	656.562	60	3		31,645	288
Harrison	424.285	26,040	1	2	13,750	307
Henry	918,897		1	21	61,720	3,918
Highland	757,324	10,138,800			13,270	212
Hocking	388,560			21	22,300	705
Holmes	761,720	260		13	51,870	2,354
Huron	661,923	2,060		1	1,206	
Jackson	412,414		1	3	2,630	12
Jefferson	472,282	1,300	10	10	11,200	245
Knox.	734,935			4	15,450	151
Lake	278,145		27	3,587	13,590,840	18,988
Lawrence.	244,758	4,341		5	5,250	5,572
Licking	1,003,726			15	38,120	283
Logan	682.680			5	37,500	
Lorain	666.194	60	85	869	2,938,410	14,552
Lucas.	409,249		38	282	660 209	40,441
Madison	453,307	10,000		3	11,660	253
Mahoning	675.149	210	1	2	6,102	206
Marion	642,540				40,500	673
Medina	741,108	145		8	27,700	540
Meigs	592 254	92,600		3	3.075	42
Mercer	966.633	60.000		16	26,030	1,682
Miami.	608,517	375	2	12	27,000	1,080
Monroe	761,659	92,770	6	20	21 980	4,445
Montgomery	757,537		17	54	115,540	7,842
Morgan	907 929	25			1,450	427
Morrow	927,032			2	14,240	208
Muskingum	773,602	1,175	1	11	20.260	2,425
Noble	807,335	30,036	4	52	6,450	901
Ottawa	279,713	7,650	13	2,999	6,797,250	225,029
Paulding	925,464			2	3.825	
Perry	531,146			6	14.850	49
Pickaway	527,201			1	2,500	72
Pike.	330,793	650		3	6,435	195
portage	641,522	540		26	35,025	161

EGGS, GRAPES AND WINE—Concluded.

Counties.	Eggs.		Grapes and wine.			
	Number dozens produced, 1896.	Number dozens shipped beyond state, 1896.	Acres new vineyard planted, 1896.	Whole number acres vineyard, 1896.	Pounds of grapes gathered, 1896.	Gallons wine pressed, 1896.
Preble	742,980	....	5	7	101,865	1,291
Putnam	837,174	46,502	....	11	44,236	2,766
Richland	689,864	50	....	8	60,675	386
Ross	482,033	35,300	1	33	31,120	2,159
Sandusky	607,194	2,000	14	32	70,400	950
Scioto	295,955	....	1	....	800	60
Seneca	735,848	....	....	33	103.520	4,047
Shelby	686,612	....	....	14	69,975	269
Stark	940,046	50	6	13	70,715	2,878
Summit	461,961	....	....	10	53,645	447
Trumbull	737,688	350	....	15	88,100	760
Tuscarawas	608,693	250.000	5	32	78,945	7,065
Union	740 239	26,000	....	10	47,375	1,584
Van Wert	1,058,935	70,000	....	3	3,200	110
Vinton	358,880	31.000	....	....	2,900	25
Warren	595,668	80	4	5	3,100	16
Washington	1,126,329	21,937	....	74	12,580	402
Wayne	1,067,976	....	....	63	161,384	5,705
Williams	715,928	2,640	....	6	24,270	587
Wood	1,473,047	40,000	16	100	369,900	6,544
Wyandot	641,591	376,700	5	....	52,510	1,123
Totals	60,155,534	11,606,296	580	27,692	47,932,045	605 348

ORCHARDS.

Counties.	Orchards.					
	Acres occupied, 1896.	Apples, bushels produced, 1896.	Peaches, bushels produced, 1896.	Pears, bushels produced, 1896.	Cherries, bushels produced, 1896.	Plums, bushels produced, 1896.
Adams	3,875	36.172	11,323	750	646	658
Allen	3,381	149,330	4,383	2,635	356	968
Ashland	3,807	347,805	16,450	1,160	970	570
Ashtabula	5,131	861,482	1,800	1,820	175	178
Athens	10,010	10,793	170,430	300	549	1,102
Auglaize	2,216	63,791	1,744	1,547	141	223
Belmont	7,100	190,995	55,527	5 277	3,418	5,478
Brown	3.459	21,559	4,188	866	300	400
Butler	1,845	4,048	4,965	1,789	807	187
Carroll	4,775	422,992	49,497	1,294	1,258	2,356
Champaign	2,528	44,912	6,012	2,558	1,444	558
Clark	2,155	24,301	7,166	2,693	1,567	1,036
Clermont	8,117	53,281	64,650	8,484	2,881	744
Clinton	2,762	21,816	5,732	2,061	1,332	2,065
Columbiana	8,570	871,520	18 882	1,730	4,498	5,966
Coshocton	6,792	258,023	90,254	931	785	422
Crawford	4,061	402 126	4,518	1,613	347	856
Cuyahoga	5.930	446,149	565	2,525	228	753
Darke	4.653	28.280	3,233	2,212	2.080	413
Defiance	3,000	85,629	2,212	1,621	293	75
Delaware	3,529	244,792	6.232	1,114	209	1,313
Erie	3,673	250 293	21,128	2,253	184	167
Fairfield	4,357	46,111	23,186	2,924	2,394	442
Fayette	1,441	10.800	4,158	687	1,34[illegible]	132
Franklin	2,581	100,242	8,483	1,241	448	936
Fulton	4,600	307 037	9,157	1,849	448	270
Gallia	6,201	71,551	16,532	253	353	1,355
Geauga	3,636	604.280	291	2,464	14	47
Greene	2,272	9,153	7,019	1,298	505	217
Guernsey	6,397	129,866	62,152	843	899	645
Hamilton	4,061	19,217	46,264	18.892	4,344	434
Hancock	5,2[illegible]8	161,539	3,657	2,397	304	320
Hardin	2,9	154,780	3,687	1,317	159	757
Harrison	3,959	201,034	43,226	1,153	716	1,266
Henry	3.313	104,001	3,771	1,617	328	173
Highland	4,640	[illegible],54	15,021	1,038	1,193	468
Hocking	3,991	31,1[illegible]	55,096	412	2,364	699
Holmes	4,486	321,315	28,172	1.376	1,909	682
Huron	5,484	448,064	1,0[illegible]	879	303	273
Jackson	3,573	48,433	19,11	710	1,244	384
Jefferson	5,308	300,101	22,964	1,541	1,038	1,769
Knox	4,320	270,808	45,1	1,011	1,044	332
Lake	3,113	411,240	101	2,000	47	50
Lawrence	5,572	14,441	11,423	291	344	197
Licking	6,757	261,[illegible]1	51,509	2,064	1,863	651
Logan	2.518	87,641	5,930	1,931	670	1,539
Lorain	5,090	485,52[illegible]	729	1,211	215	162
Lucas	3,860	228,[illegible]	12 560	4,668	362	231
Madison	1,599	49,258	4,258	743	348	304
Mahoning	4,928	614,60[illegible]	12,629	4,659	1.488	5,958
Marion	2,547	240,842	5,111	1,118	122	951
Medina	4,331	318,341	173	572	285	123
Meigs	5,823	14,509	16,433	198	565	725
Mercer	2,763	121,281	2,714	1,543	292	545
Miami	2,268	11,234	4,091	2,001	2,775	529
Monroe	5,744	87,745	31,594	1,287	2,919	2,043
Montgomery	3,630	19,027	10,237	4,855	2,669	734
Morgan	5,384	33,951	40,203	1,276	1,477	436
Morrow	4,392	311,923	15,028	680	389	2,040
Muskingum	7,747	192.348	134,851	2,284	1,727	644
Noble	4 928	46,700	49,542	775	815	812
Ottawa	9,113	72,072	136,095	5,470	140	744
Paulding	1,890	62,760	215	552	44	229
Perry	3,510	53,677	28,420	1,198	3,715	399
Pickaway	2,350	12,076	5,254	839	593	114
Pike	3,368	55,328	22,035	553	482	255
Portage	5,255	742,093	12,924	2,130	542	1,031

ORCHARDS—Continued.

Counties.	Orchards.					
	Acres occupied, 1896.	Apples, bushels produced, 1896.	Peaches, bushels produced, 1896.	Pears, bushels produced, 1896.	Cherries, bushels produced, 1896.	Plums, bushels produced, 1896.
Preble	2,888	17,882	1,385	1,253	1,382	1,284
Putnam	2,945	152,405	4,624	1,749	460	465
Richland	5,567	365,948	19,929	1,460	1,135	970
Ross	5,319	59 539	73,330	843	1,078	505
Sandusky	3,773	217,551	10,540	954	548	98
Scioto	2,864	46 927	9 419	170	221	342
Seneca	4,637	247,787	5,992	1,934	299	432
Shelby	2,196	13,375	2,675	1,447	542	716
Stark	7,079	697,475	24,066	3,287	2,325	2,846
Summit	4,266	449,333	4.028	1,634	1,365	972
Trumbull	5,414	863,686	9,294	1,799	389	1,150
Tuscarawas	6,380	353,931	61,303	1,458	1,503	2,162
Union	2,696	164,602	5,406	1,456	312	1,139
Van Wert	2,980	137,060	1,445	1,130	855	660
Vinton	4,194	31,485	32,938	209	1,364	685
Warren	3,188	12,331	13,407	5,136	862	385
Washington	11,709	42,098	37,422	461	550	859
Wayne	6,017	472,715	21,529	2,112	5,826	1,132
Williams	4.877	207,879	976	1 086	104	105
Wood	5,321	141,586	4,066	1,538	539	388
Wyandot	2.925	232 837	8,631	1,873	287	664
Totals	390,001	17,724,769	1,935,514	169,022	92,658	77,494

COMMERCIAL FERTILIZER AND MEADOWS.

Counties.	Commercial fertilizer.				Meadow.	
	Pounds used during 1896.	Cost of for 1896.	Pounds bought for 1897.	Cost for 1897.	Acres in grass (other than clover), 1896.	Tons of hay produced, 1896.
Adams	2,101 680	$24.330	411.050	$4,994	13,614	9,155
Allen	180 475	2,282	19,100	214	25,033	22,519
Ashland	1,382,973	16,078	94,150	1,175	24,124	27,655
Ashtabula	3,468,633	53,986	903,915	19,222	39,788	47,646
Athens	1,414.960	16 541	299,730	3,776	14,270	13,149
Auglaize	25 500	281	20,500	244	16,972	16.117
Belmont	1,777,607	18,589	247,050	3,166	31,733	27.803
Brown	1,038,700	10,853	176,616	2,232	19,518	12,411
Butler	143.250	1,670	26,200	300	14,288	11,287
Carroll	1,213,670	13,589	70,670	799	29,000	23,305
Champaign	788,630	9,162	396,400	4,599	13,267	15,340
Clark	396,708	4,677	217,900	2,464	15,092	16,840
Clermont	649,535	7,153	140,160	1,620	22,019	11,332
Clinton	336.560	4,794	130,226	1,778	14 031	12,407
Columbiana	2,763,300	32,069	345,695	5.195	40,411	39,786
Coshocton	827,454	8,208	136,006	1,314	28,660	26,557
Crawford	711,020	8,554	93,500	1,083	28,709	30,891
Cuyahoga	3,539,340	38,240	856,070	13,313	26,961	31,979
Darke	582 515	7,168	119,176	1,408	16,279	17,323
Defiance	32,000	458	17,800	235	18,823	21,487
Delaware	295,000	2,665	118,400	1,176	39,832	33,590
Erie	683,290	6,698	37,706	1,842	11,877	12,919
Fairfield	1,408,600	19,786	347,460	4,439	29,312	24,092
Fayette	596,436	4,598	281,200	3,379	8 469	8,442
Franklin	252,750	2,574	41.300	426	31,709	29,686
Fulton	28,900	631	7,900	227	19,295	25,979
Gallia	1,750,005	18,267	646,358	7,026	13,715	8,985
Geauga	1,882,823	26,211	871,760	10,569	21,333	26,852
Greene	123,300	1,379	31,600	375	16,011	33,708
Guernsey	1.402,200	16,932	246,500	2,919	29 185	25,704
Hamilton	....	421	....	....	12,591	11,040
Hancock	263,555	3,097	22,803	277	35,915	36,044
Hardin	100,200	774	48,400	644	23,667	32,690
Harrison	726,105	9,537	92,200	8,398	28,527	26,225
Henry	26 900	527	2,200	30	13,235	17,182
Highland	2,397.020	26,641	317,600	3,835	19,212	14,799
Hocking	2.002,923	20,029	250.841	3,104	13,278	10,131
Holmes	1,210.950	11.872	139,760	1,217	19,566	19,911
Huron	2,014,068	2,346	613,050	7,265	35,403	30.932
Jackson	1,484,910	16.799	576,415	5,858	14,158	8,625
Jefferson	1,221,682	14,558	159,900	1,718	25,999	25,330
Knox	1 405. 40	13,604	137,200	1,481	28,162	27,973
Lake	681,700	8,867	190,560	2,616	13,297	15,900
Lawrence	211,125	2 924	108,012	1,273	6,253	3,834
Licking	1,104,810	12,345	106,900	1,238	51,924	51,919
Logan	161.300	4,233	28,700	846	19,979	22,037
Lorain	1,740,420	21,356	390.432	4,695	38,134	36,527
Lucas	118,700	1,040	10,360	127	11,737	14,437
Madison	....	....	....	....	13,227	12,669
Mahoning	2,965,486	33,698	589,354	6,760	25,094	26,355
Marion	90,910	906	2 500	....	23,609	28,216
Medina	3,257,420	37,788	239,400	2,756	28,612	30,007
Meigs	1,955,889	22,429	486.970	6,005	13,054	10,720
Mercer	8,500	165	7,350	74	19,172	19,078
Miami	672,460	7,136	191,500	2,455	11,651	12,652
Monroe	1,585 502	17,817	570,950	5,987	19,600	12,724
Montgomery	1,437.850	15,706	264,620	2,830	13,876	13,257
Morgan	1,942,650	20,869	192,810	2,051	21,705	19.633
Morrow	856,191	8,654	107,361	1,134	30,047	29,591
Muskingum	2,648,795	27,043	177,233	1,919	38,146	35,747
Noble	1,090,089	11,778	95,532	1,056	20,656	16,370
Ottawa	600	....	1,500	....	10,786	11,107
Paulding	4,920	71	....	....	11,167	12,104
Perry	2,751,630	34.322	379 500	4,305	21,791	18,788
Pickaway	543,050	9,055	253,970	3,370	14,626	15,033
Pike	1,771,050	17,634	662,650	7,189	5,952	3,378
Portage	3,208,740	39,484	632.800	6,771	20,992	21,999

COMMERCIAL FERTILIZER AND MEADOWS—Concluded.

Counties.	Commercial fertilizer.				Meadow.	
	Pounds used during 1896.	Cost of for 1896.	Pounds bought for 1897.	Cost for 1897.	Acres in grass (other than clover), 1896.	Tons of hay produced, 1896.
Preble	3,581,750	$36,035	906,920	$8,618	9,173	7,482
Putnam	....	....	....	....	18,611	20,193
Richland	1,748.700	16,518	71,500	739	26.853	27,976
Ross	1,352,850	14,789	415,550	5,189	15,192	9,288
Sandusky	272,085	2,740	86.300	438	19,802	23,475
Scioto	1,913,312	22,519	519,530	6,645	10,765	8,592
Seneca	1,458,930	15,776	533,200	5,718	35.143	24,938
Shelby	533,670	11,064	122,316	1,664	14.611	15,116
Stark	2,157,900	20,186	354,654	23,119	37,113	50,630
Summit	1 613 981	20,074	352,250	4,268	21,587	24,144
Trumbull	2,427,010	30,200	628,470	8,260	35,151	35,496
Tuscarawas	1,054,430	11,119	56,400	644	38,778	37,129
Union	84,050	1,000	14,500	147	23,633	19,104
Van Wert	....	....	....	....	22,250	25,155
Vinton	1,294,950	13,369	391,814	4,175	11,260	7,686
Warren	392,150	4 982	101,600	1,302	17,296	12,927
Washington	3,294,850	37,451	1,348,104	15.837	28 800	23,722
Wayne	3,152,538	34,966	646,950	7,728	30,333	37,849
Williams	116,700	1,422	5,575	57	27,619	34,187
Wood	319,300	18,830	11,200	5,358	24,369	30,465
Wyandot	153.700	1,669	61,400	382	24,805	29,925
Totals	102,383,910	$1,168,657	22,031,664	$291,081	1,941 274	1,925.389

BONDS EXEMPT FROM TAXATION AND LANDS OWNED IN 1897.

Counties	Bonds exempt from taxation—amount of, 1896.	Number of acres cultivated, 1896.	Number of acres pasture, 1896.	Number of acres of woodland, 1896.	Number of acres lying waste, 1896.	Total number of acres owned, 1896.
Adams	$182,531	92,579	92,608	77,539	24.578	287,304
Allen	....	138,269	27,968	39,364	954	206,555
Ashland	43,900	134,132	39.793	37,206	4,406	215,537
Ashtabula	45,350	134,395	132,751	52.912	6,818	326.876
Athens	9.500	48,040	124.387	36,548	5,775	214,750
Auglaize	....	137,812	21,147	41.596	1,084	201 639
Belmont	21,000	90,211	143,745	38,343	9,049	281,348
Brown	16,500	101,627	119,383	32,518	10,662	264.190
Butler	....	147,787	20 767	20,141	8 972	197,667
Carroll	1.800	66,950	111,078	30,031	1,965	210,024
Champaign	8,900	153,301	37,023	26,937	2,689	219,950
Clark	37,180	126,126	31.363	18,480	2,371	178,340
Clermont	54,800	121,686	60,727	21,676	12,984	217,073
Clinton	25,000	158,320	65,018	29,752	4,706	257,796
Columbiana	32 200	139,970	84.024	39 909	3,368	267,271
Coshocton	1,555	89,199	150,468	48,171	2,617	290,455
Crawford	5,300	147,032	32 573	33.360	1,159	214,124
Cuyahoga	81,850	95,538	55,934	16,033	5,260	172,765
Darke	....	253,608	25,626	53,123	6,516	338.873
Defiance	....	135,783	11,969	48 913	1,875	198,540
Delaware	11,310	132,783	76,531	30,669	1,679	241,662
Erie	4,000	86,722	16,621	10,272	3,177	116,792
Fairfield	22,900	132,131	94,919	31.880	7 884	266.814
Fayette	....	108,822	73,233	12,135	612	194,802
Franklin	....	158,840	56,539	20,019	8,208	243,606
Fulton	....	140,474	20,919	30,208	1,220	198,821
Gallia	....	69,863	109.228	36 753	11,628	227,472
Geauga	8,300	73,047	93.043	38,149	1,636	205.875
Greene	25,000	136,654	33,137	25,211	3,942	198,944
Guernsey	10,000	71,399	141,701	40.952	2,739	256,791
Hamilton	....	....	....	....	....	....
Hancock	2,550	192 395	34,909	49,566	1,982	278,852
Hardin	....	153,506	29,424	30,481	1 690	215,101
Harrison	....	51,258	118,023	28,805	3,566	201,652
Henry	....	142,787	8,286	37,403	2,841	191,317
Highland	183 625	111,545	140,588	41,338	8 339	301.810
Hocking	8,000	42,768	105,213	43.945	6,013	197,939
Holmes	....	124,890	63,318	41,056	7,343	236.607
Huron	....	160,412	64,776	32,449	3,916	261,553
Jackson	7,500	50,891	98,816	29,788	9,305	188,800
Jefferson	19,400	86,603	93,940	35,528	5,737	221,808
Knox	....	120 539	119,365	41 350	2,670	283,924
Lake	82.550	59,410	32,508	15,113	2,115	109,146
Lawrence	17,100	47,944	51,829	49,257	22,496	171,526
Licking	1,200	138,043	186,939	48,055	3,850	376,887
Logan	12,700	139,747	37,705	32,578	1,358	211,388
Lorain	....	126,862	87,356	27,440	2,749	244,407
Lucas	....	77,186	9,157	14,271	3,575	104,189
Madison	700	118,445	75,732	11,949	776	206,902
Mahoning	35,000	110,637	62,382	29,976	1,474	204,469
Marion	....	112,652	52,716	22,861	766	188,995
Medina	....	129,521	66,518	30,311	803	227,153
Meigs	6,320	63.629	86,625	34,630	5,328	190.212
Mercer	....	156,063	16.530	62,534	4,053	239,180
Miami	....	142,785	7,217	17,745	2,123	169,870
Monroe	122,055	73,729	112,694	48,745	15,861	251,029
Montgomery	247,600	160,057	17,500	24,295	7,209	209,061
Morgan	39,400	60,708	125,764	33,874	5,091	225,437
Morrow	....	108,899	72,786	34,010	915	216 610
Muskingum	58,500	94,116	201,736	49,529	6,409	351,790
Noble	3,200	62,381	136,426	28,452	2,467	229,726
Ottawa	....	80,670	17,700	11,427	5,410	115.207
Paulding	....	100,101	8,959	33,638	3,503	146,201
Perry	17,900	48,215	115,305	26,254	4,299	194 073
Pickaway	....	145,142	77,610	22,103	6,334	251.189
Pike	4,000	61,739	44,625	59,592	12,390	178.346
Portage	....	128,709	88,238	38,941	6,231	262,119

BONDS EXEMPT FROM TAXATION AND LANDS OWNED IN 1897.

Counties.	Bonds exempt from taxation—amount of, 1896.	Number of acres cultivated, 1896.	Number of acres pasture, 1896.	Number of acres woodland, 1896.	Number of acres lying waste, 1896.	Total number of acres owned, 1896.
Preble	$ 44,550	179,593	26,095	35,875	7 613	249,176
Putnam	47,000	154,375	7,601	41,284	14,702	217,962
Richland	7.000	171,217	33,999	46,206	4.407	255,829
Ross	8,000	139,071	95,627	55,134	17,782	307,614
Sandusky	2,000	140,439	18,399	25,326	5,061	189,225
Scioto	4,400	71,126	35,842	51,729	32,188	190,885
Seneca	....	195 618	33 085	42,924	1,193	272,820
Shelby	1,400	172,872	31,739	45,908	4,076	254,595
Stark	5,300	201,060	45,359	31,772	7,035	285,226
Summit	1,700	129,751	49,718	21,666	7,720	208 855
Trumbull	54,035	127,574	134,125	47,445	2,319	311.463
Tuscarawas	16,790	117,350	123,095	45,126	9,532	295,103
Union	....	119,280	68,825	30,338	791	219,234
Van Wert	....	154,410	11,960	40,540	800	207.710
Vinton	....	37.783	79,370	37,420	8 722	163,295
Warren	13.500	137,693	35,202	25,729	6,829	205,453
Washington	75,900	115 203	130,631	60,446	14,860	321,140
Wayne	8,600	215,799	27,251	41,439	2,664	287,153
Williams	....	159,359	31,790	28,405	1,724	221,278
Wood	3,000	193,456	26,402	36 923	2,943	259,724
Wyandot	....	129,433	50,988	25,411	2,169	208 001
Totals	$1,811,351	10,470,546	5.870,541	3,061,135	496,650	19,898,872

WOOL, MILCH COWS, STALLIONS, DOGS AND SHEEP.

Counties.	Wool.	Milch cows	Stallions	Dogs.	Sheep.			
					Killed by dogs.		Injured by dogs	
	Pounds shorn, 1896.	Number owned, 1896.	Number owned, 1896.	Total number, 1896.	Number, 1896.	Value, 1896.	Number, 1896.	Value, 1896.
Adams	37,878	3,699	27	1,412	244	$592	67	$112
Allen	76,141	6,355	37	1,410	393	1,044	278	336
Ashland	203,188	6,224	29	1,294	239	724	162	277
Ashtabula	77,075	16,443	32	1,476	181	727	114	362
Athens	215,524	3,743	43	1,591	548	1,031	100	172
Auglaize	53,662	5,935	26	1,440	119	274	91	127
Belmont	359,787	8.483	31	3,358	556	1,210	553	552
Brown	41,270	5,388	31	1,824	80	265	30	77
Butler	25 615	6,246	54	815	221	783	103	338
Carroll	314,263	5,536	32	1,237	530	1,355	306	427
Champaign	104,085	5,550	48	1,853	150	492	392	191
Clark	142,509	5,653	36	1,755	431	1,406	271	543
Clermont	24,811	5,978	24	1,330	245	606	118	271
Clinton	115,515	4,285	43	1,120	142	1,668	85	1,440
Columbiana	170,504	11,909	41	1,496	523	1,362	237	458
Coshocton	463,164	6,190	33	1,655	781	1,696	251	240
Crawford	201,365	6,281	18	1,985	266	828	135	245
Cuyahoga	27,188	10,983	11	1,323	166	809	193	408
Darke	24,013	9,652	55	2.524	103	439	98	735
Defiance	71,401	5,290	28	1,535	123	350	79	222
Delaware	210,081	5.933	60	770	340	1,070	224	294
Erie	65,514	3,870	22	487	145	434	42	71
Fairfield	58,098	6,573	47	2,243	366	1,062	126	363
Fayette	44,315	2,820	20	246	138	466	58	113
Franklin	44,271	10,086	43	930	380	1,143	87	179
Fulton	96,385	7,880	28	639	133	396	155	265
Gallia	61,945	3,994	11	951	293	902	111	208
Geauga	66.335	12,499	23	369	182	1,049	46	94
Greene	91,028	5,129	31	1,546	414	1,207	94	159
Guernsey	378,170	5,898	22	1,256	647	1,201	408	500
Hamilton	....	....	....	....	....	....	....	....
Hancock	155,955	8,323	27	2,974	432	1,139	355	489
Hardin	154,248	5,577	25	824	630	1 367	413	780
Harrison	539,373	4,849	22	475	520	1,294	201	384
Henry	36,505	6,468	13	1,786	131	379	44	78
Highland	87,176	5 084	38	1,424	307	1,016	99	196
Hocking	97,560	3,582	10	1,499	271	440	202	200
Holmes	148,219	6,988	27	1,457	230	603	203	268
Huron	275,803	7,098	42	976	358	1,512	184	294
Jackson	61,257	3,417	21	1,918	290	728	409	237
Jefferson	290,035	6,097	33	717	554	1,316	134	223
Knox	460,255	6,185	53	1,476	626	1,474	330	362
Lake	38,138	3,747	10	939	182	434	52	98
Lawrence	11,131	2,565	18	1,821	122	295	5	30
Licking	527,657	9,209	59	2,906	742	1,772	401	525
Logan	155,657	5,108	30	870	179	480	144	584
Lorain	125.062	11,273	30	907	245	789	143	269
Lucas	12.426	5,239	13	1,027	96	256	68	121
Madison	144,390	3,950	32	1,172	230	772	184	234
Mahoning	145,655	8,767	34	2,881	329	737	256	486
Marion	328,133	4,654	31	1,413	426	1,150	366	517
Medina	159,538	8,708	28	778	237	836	102	260
Meigs	137,653	3,682	32	2.039	425	871	300	301
Mercer	38,049	6,740	30	1,552	71	278	121	237
Miami	19,488	6,160	42	787	137	582	206	324
Monroe	71,673	7,046	28	2,243	598	1,358	204	209
Montgomery	7,916	8,228	22	2,829	36	120	108	63
Morgan	334,887	4,725	30	1,581	565	1,295	253	362
Morrow	322,291	5,419	41	674	265	589	102	176
Muskingum	472,490	8,884	48	1,098	669	1.817	393	501
Noble	243,588	5,556	27	1,180	395	1,013	152	266
Ottawa	27,860	4,498	12	701	136	455	14	50
Paulding	19,153	3.630	27	1,628	138	435	94	175
Perry	156,250	4,475	16	1,610	324	735	161	293
Pickaway	45,628	4,737	42	1,442	172	630	78	224
Pike	22,435	2,160	18	1,208	123	303	78	139
Portage	120,350	12,362	48	1,682	305	905	96	179

WOOL, MILCH COWS, STALLIONS, DOGS AND SHEEP—Concluded.

Counties.	Wool.	Milch cows	Stallions	Dogs.	Sheep.			
	Pounds shorn, 1896.	Number owned, 1896.	Number owned, 1896.	Total number, 1896.	Killed by dogs.		Injured by dogs	
					Number, 1896.	Value, 1896.	Number, 1896.	Value, 1896.
Preble	33,159	6,289	24	996	106	$322	121	$129
Putnam	34,845	6.289	20	860	105	327	32	67
Richland	163,781	6,893	15	1,594	152	446	147	330
Ross	46,679	4,785	33	974	521	1,388	175	400
Sandusky	65.936	6,780	18	1,322	166	586	79	205
Scioto	6,297	2,887	18	1,256	56	124	66	62
Seneca	162,462	7,886	25	1.606	419	1,326	217	324
Shelby	28.985	6,814	34	1,666	434	1,300	131	183
Stark	130,354	13,368	34	4,473	632	2,580	595	924
Summit	41,179	11.833	21	1,098	207	643	64	101
Trumbull	140,458	15,428	53	2,653	438	1,261	277	528
Tuscarawas	151,606	10,932	24	968	679	1,463	362	572
Union	190,750	5,052	34	244	502	1,421	204	486
Van Wert	43,495	5,645	35	1,197	238	736	205	490
Vinton	110,548	2,461	10	765	242	441	109	257
Warren	61,164	5,157	33	902	219	748	185	296
Washington	296,001	7,186	13	3,223	719	1,380	264	299
Wayne	107,401	10,013	47	2,181	314	936	173	290
Williams	135,849	5,516	13	1.416	267	828	1,014	909
Wood	84,074	8,544	26	1,446	389	1,024	162	280
Wyandot	368.432	4,988	34	1,543	212	489	113	171
Totals	12,262,439	474,432	2,609	126,747	27,592	$76,535	16.364	$26,216

DOMESTIC ANIMALS DIED FROM DISEASES, 1896.

Counties.	Hogs.		Sheep.		Cattle.		Horses.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Adams	452	$1,920	284	$657	115	$1,888	91	$2,623
Allen	9,648	29,896	497	1,369	156	3,449	140	8,260
Ashland	498	2,301	1,273	3,234	174	3,587	131	6,895
Ashtabula	341	1,814	688	1,812	260	6,891	63	3,135
Athens	152	845	993	1,383	105	1,741	52	1.736
Auglaize	1,845	7,150	476	1,157	141	2,539	130	4,794
Belmont	230	1,207	1,356	2,322	206	4,885	106	3,985
Brown	1,115	4,523	638	1,731	143	3,168	216	3,811
Butler	4,621	20,359	386	1,477	172	3.936	190	8,341
Carroll	155	787	2,434	4,051	106	1,876	58	2,330
Champaign	1,830	7,263	1.283	3,125	171	3,829	168	6,713
Clark	3,650	15,766	720	1,438	143	3,074	128	6,115
Clermont	974	5 039	321	929	165	3,264	122	4,448
Clinton	8,540	32,565	1,799	3.958	151	2,870	118	3,733
Columbiana	365	2,213	1,325	2,930	235	6,118	116	6,037
Coshocton	248	1,001	3,685	5,729	111	2,433	68	2,551
Crawford	1,503	6,570	2,679	4.065	125	2,833	120	5,204
Cuyahoga	403	2,138	245	714	226	6,861	141	6,710
Darke	3,145	13,059	209	767	304	5,858	414	11,846
Defiance	8,461	32,552	537	1,711	137	2,572	124	4,558
Delaware	1,299	5.682	1,888	3,369	113	2,884	120	5,859
Erie	918	5,057	423	952	93	2,492	94	4,363
Fairfield	3.219	13,653	619	1,539	136	3,680	116	4,842
Fayette	11 227	36,851	735	1,593	86	2,346	141	3,635
Franklin	12,181	45,714	709	1,756	346	8,072	405	10,560
Fulton	2,047	8,093	795	2,122	173	4,375	113	6,450
Gallia	155	775	691	1,273	117	1,942	97	3,257
Geauga	153	1,023	746	1 971	429	5,888	71	3,343
Greene	5,228	22,517	1,155	2,772	177	4,237	173	7.570
Guernsey	189	837	2,242	3,082	182	3,015	73	2 840
Hamilton	1,271	5,370	70	235	192	3,862	160	5,125
Hancock	13,418	47,635	1,428	3,007	236	4,884	173	8,000
Hardin	2,795	11,228	1,382	2,231	118	2.408	106	4,706
Harrison	88	754	1,707	3,117	114	2,575	50	3,418
Henry	7,555	25,721	373	887	184	8,213	135	6,728
Highland	6,409	23,183	1,140	3,248	157	3,608	137	4,125
Hocking	294	1,574	540	937	76	1,421	62	2,091
Holmes	278	1,398	1,531	3.766	179	3,611	116	4,817
Huron	241	1,167	1,839	4,355	145	3,440	112	5,161
Jackson	216	944	1,249	2,662	119	2,108	39	1,263
Jefferson	135	798	1,342	1,915	150	3,752	112	4 959
Knox	554	2,586	3,962	5,880	113	2,566	73	3,753
Lake	108	674	254	507	57	1,470	47	2,475
Lawrence	314	1,189	268	540	101	1,339	66	2,622
Licking	1,175	4,620	6,928	10,628	258	5,584	217	7,270
Logan	1,456	5,693	1,800	4,176	164	3,575	153	60
Lorain	430	2,340	712	1,826	168	4,436	171	3,310
Lucas	761	2,745	156	706	154	3,747	141	5,817
Madison	9,384	35,323	2,189	5,590	279	4,883	203	7,917
Mahoning	250	1,281	961	2,009	181	4,332	80	3.429
Marion	7,653	29,182	2,763	5,134	102	2,671	150	6,510
Medina	230	1,429	2,073	5,585	186	4,631	100	5.395
Meigs	157	836	741	1,240	77	1,383	79	2,808
Mercer	7.674	24,882	358	1,260	168	3.044	150	5,590
Miami	1,100	5,840	309	1,054	173	3,612	194	8,159
Monroe	238	1,117	379	638	121	2,019	67	2,338
Montgomery	6,032	31,690	178	586	268	4,481	272	10,430
Morgan	156	922	1,480	2,041	163	2,111	66	2,647
Morrow	276	1,556	2,298	4,410	95	2 000	84	4,103
Muskingum	274	1,286	3,137	4,144	207	3,012	127	4,272
Noble	262	1,132	1,222	2,051	140	2,211	98	3,215
Ottawa	1.153	3,645	267	486	88	1,790	84	4,276
Paulding	13,966	51,902	212	499	163	1,894	153	5,748
Perry	227	1,275	982	1,521	104	2.090	61	2.245
Pickaway	18.724	73·525	656	1,787	167	4,255	244	10,610
Pike	1,511	5,141	588	954	60	1,163	112	3.461
Portage	320	1,695	1,544	4,274	228	5,940	115	5,810

DOMESTIC ANIMALS DIED FROM DISEASES—Concluded.

Counties.	Hogs.		Sheep.		Cattle.		Horses.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Preble	13,933	$56,075	448	$1,413	185	$4,434	176	$7,955
Putnam	12,027	42,003	479	1 211	183	3,308	163	8,450
Richland	496	2,099	1,443	3,246	182	3,509	110	5.012
Ross	10,862	40,836	892	1,985	262	4,471	205	7,940
Sandusky	3,741	16,480	917	2,740	160	3,698	126	7,099
Scioto	486	1,776	157	291	98	1,625	82	2,612
Seneca	1.229	4,266	756	1,744	118	2,420	119	5,790
Shelby	1,892	7,033	320	864	188	3.006	161	6.001
Stark	1,534	7,200	1,662	4,170	385	8,338	232	12,343
Summit	461	2,161	493	1,137	214	5.659	138	6,962
Trumbull	311	1,701	1,438	3,092	249	6,356	120	5,675
Tuscarawas	448	2.277	1,399	2,392	254	4,616	153	4,790
Union	6,167	22,321	2,090	5,310	103	2,704	151	6,851
Van Wert	20,215	75,965	435	1,305	121	2,835	166	6,195
Vinton	117	584	690	902	70	1.130	64	1,822
Warren	2,459	9,089	1,015	2,771	138	2,710	117	3,997
Washington	179	1,051	1,289	1,837	197	3,061	114	4,750
Wayne	728	3,596	1,576	4,657	256	5,131	167	8,441
Williams	1,881	6 880	1,059	2,908	107	2.498	86	3,200
Wood	2,371	9 542	908	2,222	184	4,607	158	9,415
Wyandot	2,733	10,028	3,222	5,973	105	2,429	121	5,188
Totals	276,147	$1 065,411	103,537	$213,024	14,612	$311,269	11.537	$461,725

LOSSES BY FLOOD.

Counties.	Live stock, value.	Cattle, value.	Houses, etc., value.	Fences, etc., value.	Grain, value.	Total.
Athens			$830	$475		$1,305
Belmont					$40	40
Butler	$600			550		1,150
Champaign				10	1,855	1,865
Clark				50		50
Coshocton				597		597
Cuyahoga					550	550
Franklin			50			50
Guernsey				3,710		3,710
Hancock	20					20
Hardin		$6,850				6,850
Henry					170	170
Hocking				990		990
Jackson				235		235
Jefferson					503	503
Knox	30					30
Licking	50	6,960		500		7,510
Meigs					565	565
Miami				275		275
Monroe			25	2,600	365	2,990
Noble				2,212		2,212
Paulding	58					58
Pike				50	60	110
Richland					800	800
Scioto					725	725
Warren		30		50		80
Washington	30		4,497	4.027		8,554
Wayne	30					30
Totals	$818	$13,840	$5,402	$16,331	$5,633	$42,024

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO FOR SEVEN YEARS.

Counties	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	....	36	519	154	400	76	320
Allen	1,662	1,216	532	124	203	1,351	1 253
Ashland	3,222	4,274	8,647	3,822	3,116	6,817	7,077
Ashtabula	1,489	1,538	1,807	1,340	2,637	10,549	6,692
Athens	....	6	....	....	....	170	....
Auglaize	21,324	31,715	36,478	23,972	22,492	25,798	21,060
Belmont	1,547	1,962	1,484	1,047	776	1,289	1,226
Brown	40	....	....	....	185	....	400
Butler	56,595	153,324	119 361	99,333	51,755	43,301	46,924
Carroll	76	120	124	50	75	375	30
Champaign	430	824	1.756	30	220	1,115	1,771
Clark	1,247	6,535	8,205	5,617	2,890	6,885	3,972
Clermont	....	219	36	100	20	10	....
Clinton	338	1,012	2,831	447	1,656	1,893	2,124
Columbiana	345	335	367	432	693	1,881	676
Coshocton	125	14	18	21	26	35	130
Crawford	5,827	3,689	6,319	2,543	4,432	5,198	5,726
Cuyahoga	51	....	497	428	250	1,020	1,046
Darke	32,088	31,212	50,109	16,046	16,632	24,320	10,927
Defiance	18,594	17,928	15,718	9,507	4,638	12,960	18,207
Delaware	25	....	....	75	300	....	130
Erie	13,394	19,116	28,783	22 948	23,621	45 587	42,634
Fairfield	2,144	1,323	1,372	145	770	746	2,021
Fayette	....	206	300	300	275	....	....
Franklin	32	24	1.739	350	6	....	70
Fulton	5,118	9,096	3,193	2,997	2,950	19,105	48,861
Gallia	....	....	....	....	....	120	....
Geauga	63	174	159	....	189	1,067	1,110
Greene	225	6,158	7,378	4,981	1,911	4,053	3.065
Guernsey	1,063	41	337	112	175	244	107
Hamilton	7,056	32,062	80,933	109,582	8,501	13,271	8,703
Hancock	4,933	4,565	2,400	432	433	1,357	2,283
Hardin	....	50	122	72	1,040	570	688
Harrison	460	260	159	83	290	228	193
Henry	20,785	13,096	7 468	3,709	1,104	7,450	16,521
Highland	464	1,180	894	223	....	185	215
Hocking	97	....	308	180	165	69	38
Holmes	736	829	1,689	915	634	2,191	663
Huron	4,933	5,552	10,597	5,362	4,972	12,153	16,456
Jackson	....	4	....	....	....	10	....
Jefferson	1,817	141	1,184	882	2,101	442	753
Knox	211	1,462	449	151	48	496	2,072
Lake	690	2,728	2,950	949	2,442	6,415	6,599
Lawrence	48	....	....	....	....	....	....
Licking	....	109	3.490	369	140	430	1,675
Logan	1,811	2,321	8,521	1,777	1,530	2,107	863
Lorain	518	1,216	2.810	5,101	2 680	8,590	6,578
Lucas	8.461	6,968	6.043	5,665	6,034	16,072	35,525
Madison	60	389	1,600	1,387	3,828	4,009	930
Mahoning	230	93	417	792	246	876	499
Marion	460	578	1,045	....	448	2,275	3,679
Medina	57	200	22	132	294	999	2,527
Meigs	1,000	862	1,274	1,295	743	432	611
Mercer	26,828	41,492	39,343	20,486	17,408	15,053	8,078
Miami	12,296	13,661	21,575	12,299	11,803	14,601	14,454
Monroe	....	....	10	....	20	40	....
Montgomery	14,026	30,299	33,480	19,980	23,436	24,480	23,538
Morgan	41	61	151	98	28	....	91
Morrow	84	464	181	262	258	408	1,023
Muskingum	1,459	1,467	3,209	1,108	900	515	770
Noble	50	425	60	....	....	....	....
Ottawa	61,266	47,118	27,782	20,204	16,049	23,347	42,005
Paulding	6,611	2,546	862	569	165	365	2,816
Perry	80	87	251	164	123	72	35
Pickaway	....	1,300	627	....	378	22	1,897
Pike	....	....	192	172	145	5,150	418
Portage	156	1,621	609	45	325	1,615	790
Preble	8,087	12,878	23,155	9,038	8,711	6,846	5,827

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY, ETC.—Concluded.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890
Putnam	9,386	6,668	5,604	989	314	1,695	6.114
Richland	7,412	10.332	18,907	10,933	7,468	11,344	11 655
Ross	15	3.961	3,491	211	200	110	250
Sandusky	4,566	7,244	9,064	3,418	4,456	11.773	12,437
Scioto	500	1,249	195	....	1,025	1,290	1.120
Seneca	151	3 352	2.061	1,491	802	2.237	5,446
Shelby	33,949	60 875	42,373	19,917	19.249	23,207	21,402
Stark	899	1 897	1,657	1,064	2,978	2,720	2,228
Summit	450	415	491	105	110	985	491
Trumbull	16	214	175	300	156	108	115
Tuscarawas	51	56	182	....	37	1,742	1,114
Union	....	26	3	....	90	139	258
Van Wert	10,410	9,143	7,110	3,281	1,946	7,236	4,970
Vinton	....	....	....	....	....	....	....
Warren	9,934	30,365	16,895	1.192	19,232	14,333	16,125
Washington	301	....	....	....	....	87	....
Wayne	689	1,116	934	398	160	1,457	1,402
Williams	10,164	6,297	3,483	2.347	1,408	2,839	8,083
Wood	21,091	12.622	18,404	14,936	18,449	36,815	47,873
Wyandot	....	370	610	....	345	114	1.890
Totals	462,859	676,383	715,570	480,986	339,140	509.337	579,849

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN OHIO FOR SEVEN YEARS.

Counties.	Pounds of broom brush.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	500	600	300	1,000	2,125	837	500
Allen	......	......	50	......	800	......	......
Ashland	3,110	3,900	1,800	......	2,322	6,420	120
Ashtabula	......	450	......	1,000	1,000	22	......
Athens	......	......	......	......	200	......	1,411
Auglaize	90,100	248.020	175,750	121.900	34,700	30,100	......
Belmont	......	4,320	2,468	670	2 200	......	109
Brown	550	3,300	2,380	825	800	1,200	......
Butler	33,000	20.500	24,400	37,200	36,250	68,500	93,950
Carroll	......	......	......	......	......	......	......
Champaign	......	7,600	82,550	52,000	86,332	52,900	96 690
Clark	......	......	......	......	500	3,400	1,200
Clermont	......	2 000	4,350	21.400	1,700	500	2,000
Clinton	......	400	1,000	2,300	1 565	......	......
Columbiana	350	247	......	......	600	450	600
Coshocton	......	30	......	50	2,680	......	......
Crawford	......	......	......	......	700	4,600	......
Cuyahoga	......	......	......	120	......	......	......
Darke	17,022	36 520	58,210	22,100	28,300	18 465	12,925
Defiance	200	......	......	......	......	......	......
Delaware	......	......	2,300	1,000	17,600	1.075	1,400
Erie	10,600	2,000	15 000	......	......	3 000	......
Fairfield	145,250	801	1,100	9.700	6 900	750	1,800
Fayette	300	4,200	18,000	9,000	12,855	26.500	4,000
Franklin	6,000	4,500	28,550	43,400	29,300	24.800	113,605
Fulton	2,000	......	......	1,200	1.800	2,250	4.200
Gallia	3,600	......	135	......	......	......	400
Geauga	1,400	......	......	......	......	82	......
Greene	4,000	......	8,000	1,200	9,900	3,000	2.900
Guernsey	......	......	......	......	140	......	......
Hamilton	1,300	12,800	7,000	8,200	10.424	1.055	10,000
Hancock	3,000	......	......	......	2,260	......	312
Hardin	310	200	22,000	50.089	16,060	40.000	......
Harrison	......	100	......	......	......	25	......
Henry	4,550	......	......	......	......	3,000	3.000
Highland	......	900	2,600	2,700	11,200	10 500	9,600
Hocking	450	3,400	2,800	465	......	......	......
Holmes	......	400	2.100	......	......	2.261	273
Huron	......	......	1,200	300	900	18,000	700
Jackson	......	......	......	......	......	......	......
Jefferson	......	......	2 209	600	370	......	......
Knox	......	1,910	......	510	......	1,900	......
Lake	......	4.000	......	......	......	......	......
Lawrence	......	3,000	1 500	800	......	......	......
Licking	2,427	2,500	5 200	16,500	......	......	2.700
Logan	8,010	27,000	22,600	......	1.400	300	......
Lorain	......	2,400	......	......	800	......	800
Lucas	......	......	1,500	......	......	150	1,080
Madison	5,000	2,000	......	1.100	1,500	......	......
Mahoning	......	......	......	36	300	1,000	2,000
Marion	......	......	......	......	75	......	115
Medina	5,369	1.400	......	......	......	1,560	1,825
Meigs	......	5,930	......	1,850	8 600	6,000	940
Mercer	1,045	14,200	6.000	2,300	70	......	......
Miami	3,000	3,625	14,500	6,300	14,000	6 130	36,712
Monroe	......	50	100	......	160	......	......
Montgomery	145'400	25,600	33,000	23,970	3,150	4,640	5,620
Morgan	......	540	35	171	240	100	......
Morrow	......	......	1,550	......	118	......	......
Muskingum	......	100	......	......	......	23	1,200
Noble	500	502	471	......	1,200	300	......
Ottawa	......	......	......	......	......	......	......
Paulding	......	......	......	......	......	......	......
Perry	......	......	75	154	......	2,000	......
Pickaway	......	66,000	64,000	85,200	125,000	......	104 000
Pike	300	200	2,000	1,000	......	800	84
Portage	......	200	......	400	......	......	......
Preble	67,000	9,300	3,842	10,050	26,800	16,000	6 800

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN, ETC.—Concluded.

Counties.	Pounds of broom brush.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	700	500	40	....	....	....	....
Richland	1,460	....	5,675	260	....	380	....
Ross	....	....	200	36	2,000	....	400
Sandusky	....	109	....	....	1,200	1,500	500
Scioto	1,000	3,944	....	....	45	500	525
Seneca	700	....	....	125	....	....	....
Shelby	7 200	....	99	5,100	800	1,700	1,065
Stark	....	....	800	1,000	170	116	17
Summit	....	....	1,200	....	45	....	....
Trumbull	....	....	....	50	....	....	1,500
Tuscarawas	3,090	1,500	....	130	430	....	....
Union	7,850	5,600	2,354	....	3.700	2 000	15,000
Van Wert	....	250	....	....	....	1 600	....
Vinton	....	....	1,150	....	18	....	3,400
Warren	1·000	....	....	....	....	8,754	5,200
Washington	....	....	200	....	....	....	....
Wayne	50	1,755	1,105	20	22,420	1,168	1.505
Williams	....	400	1,800	....	450	4.500	9,515
Wood	....	1,500	....	100	....	....	700
Wyandot	....	....	....	....	1.300	65	....
Totals	58 963	543,203	637,248	542,551	538,474	386.878	564,998

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR SEVEN YEARS.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1393.	1892.	1891.	1890.
Adams	42	13	4	64	93	123	21
Allen	602	41	235	246	1,265	1,598	1,190
Ashland	4,508	2,501	815	938	2,744	1 837	1,506
Ashtabula	71,929	89,775	49,181	35,571	38,476	27,607	21,351
Athens	506	280	279	236	444	748	481
Auglaize	4.909	1.222	1,412	1,442	2,605	2,633	820
Belmont	2,017	1,266	248	1,142	369	1,535	509
Brown	87	....	20	40	121	230	360
Butler	1,097	14	203	128	26	402	206
Carroll	3,071	2,936	551	1,233	1.343	1,444	1,186
Champaign	1,171	989	1,340	979	292	1,235	555
Clark	196	147	244	569	88	508	958
Clermont	231	169	53	324	217	478	776
Clinton	935	237	128	72	479	698	536
Columbiana	5,019	6,952	1,722	1,875	2,309	2,265	2,829
Coshocton	6,025	4,457	1,075	1,605	1,830	1,631	1,006
Crawford	2,241	904	1,152	923	1.434	461	1,645
Cuyahoga	315	1,276	321	81	498	195	387
Darke	2,228	820	331	198	1,502	1,781	1,034
Defiance	2,166	284	1,965	898	2,322	4,389	5,317
Delaware	1,426	265	516	1,167	1.618	1,476	2,284
Erie	11,342	4 673	4,261	3,084	6,548	5,741	6,991
Fairfield	762	828	150	68	183	211	386
Fayette	385	....	320	25	53	122	16
Franklin	2,469	323	927	829	1,658	1,660	929
Fulton	8,119	4,300	7,408	5,722	5,888	8,782	16,730
Gallia	272	64	167	71	335	549	238
Geauga	6,988	5,975	2,409	2.955	6,452	3 912	3,375
Greene	468	50	5	46	92	114	140
Guernsey	2 880	872	885	7,489	1,217	2,032	1,824
Hamilton	674	30	....	40	494	251	183
Hancock	1,009	449	695	509	1,444	3,156	3,169
Hardin	1,330	550	1,563	922	1,480	1,840	2,008
Harrison	1,118	983	485	315	480	639	785
Henry	3,131	28,426	2,254	1,308	2,001	2,915	6,871
Highland	508	85	108	102	135	144	151
Hocking	2,830	3,623	1,303	622	1,200	1,113	553
Holmes	4,256	3,727	836	943	1,970	1,833	1,651
Huron	4,465	2,437	1,714	838	2,949	3,657	5,010
Jackson	1,129	658	206	249	872	385	215
Jefferson	997	972	429	288	503	496	363
Knox	10,182	3,510	583	1.138	2,516	1,845	2,040
Lake	2,895	3,086	2,138	741	879	1,569	1,890
Lawrence	307	161	50	29	111	....	166
Licking	9,928	1.396	900	1,334	2,302	1,082	757
Logan	2,385	1.287	1.210	331	1,351	927	1,074
Lorain	1,092	675	838	691	1,373	188	402
Lucas	10,028	6,799	7,393	4,812	5.196	9,786	9,229
Madison	278	37	185	133	192	399	114
Mahoning	5,135	2,674	1,319	8.233	4,534	2,547	3,565
Marion	343	434	179	379	912	1,429	1,480
Medina	4,439	952	373	644	861	1,169	560
Meigs	242	142	41	492	200	376	206
Mercer	1,909	238	296	174	4,323	1.211	1,111
Miami	261	55	26	242	373	627	274
Monroe	5,475	6,688	1,134	1,423	2,256	3,497	1,717
Montgomery	180	190	48	129	69	98	55
Morgan	1.352	1,063	828	512	699	2,008	760
Morrow	1,251	495	465	771	1,364	1,327	2,469
Muskingum	607	480	184	412	800	616	326
Noble	732	645	28	279	550	876	253
Ottawa	759	530	213	13	634	927	824
Paulding	1,700	186	693	522	4,747	3,114	5,798
Perry	1,579	907	849	936	1,181	1 484	711
Pickaway	42	10	3,838	70	355	152	55
Pike	1,402	365	794	85	868	424	153
Portage	12,327	6.778	2,373	3.578	4,435	3,985	3,791
Preble	163	12	54	105	360	518	356

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT, ETC.—Concluded.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891	1890.
Putnam	1,933	614	544	192	2,162	1,159	3,811
Richland	3,138	2,679	734	902	2,970	618	1,998
Ross	1,393	247	706	140	154	238	398
Sandusky	2,074	1,265	1,583	855	1.385	2,119	2,455
Scioto	1,723	1,767	1,267	161	866	1,132	447
Seneca	1,006	465	504	283	1,072	1,263	2,387
Shelby	4,777	2,468	1 728	1,191	1,298	1,457	7 802
Stark	3,329	3,086	690	541	1,316	1,240	1,891
Summit	3,761	3,100	1,027	1,101	1,129	1,492	1,654
Trumbull	24,074	18,546	8,552	5,937	12,119	7,821	10,045
Tuscarawas	4,694	2,171	1,158	2,191	1,718	2,778	1,550
Union	2,327	68	255	58	1,464	1,075	1,525
Van Wert	795	262	710	292	3,953	2,005	3,402
Vinton	1,455	1,650	656	388	835	702	532
Warren	579	56	41	136	163	398	151
Washington	2,492	1,994	913	1,423	1,638	2,784	1,324
Wayne	2,662	2,295	630	601	1,536	985	1,136
Williams	1,946	808	948	517	2,011	1,744	3,408
Wood	3,052	806	930	1,762	2,974	2,764	6,727
Wyandot	801	300	655	215	1,107	1,064	637
Totals	310,859	258,024	139,203	123,295	181 339	169,785	190,991

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR SEVEN YEARS.

Counties.	Tons of hay.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	1,160	1,438	1,585	3 906	1,023	1,714	1 757
Allen	350	1,773	9,879	25,327	5,746	8,087	11.835
Ashland	9,795	6,002	10 488	21,891	13,665	11,677	10,423
Ashtabula	4,041	1,314	879	1,004	778	1,223	1,491
Athens	400	296	950	1 146	291	268	521
Auglaize	1,967	1,512	9,501	12,148	6,622	8,236	9 223
Belmont	2,073	694	1,958	3,145	513	767	1,773
Brown	653	719	792	2,552	1,151	1,258	1,869
Butler	2,057	5,629	9,104	13 796	7,373	9,950	5.497
Carroll	826	509	1,642	6,804	2,478	1,965	2 335
Champaign	1,813	5,068	14,494	16,252	13.892	13 720	13.795
Clark	2,337	5,622	10,297	16,467	11,346	15 167	13,194
Clermont	905	2,022	1.536	1.304	1,804	2,140	1,571
Clinton	3,251	4,109	3,307	5,188	2,841	4,013	2,295
Columbiana	3,377	3,326	8,534	11 829	3,253	2,409	3 321
Coshocton	2,527	809	1,773	5 071	2,152	3,725	3.706
Crawford	5,346	7,100	9,281	18 711	2,494	4,810	17,382
Cuyahoga	2,626	2,341	1,524	2,298	1 091	943	866
Darke	1,194	4,426	20,442	25,439	15 539	18 835	14,083
Defiance	1,333	6,472	6,980	12,706	5,806	8 227	10,723
Delaware	3,003	3.683	9,217	11,055	5,461	5,507	6,823
Erie	2.046	3,867	2 173	5.451	5 555	5,206	5,032
Fairfield	4,205	7,183	13,520	11,613	5,288	5,234	5,569
Fayette	894	2,722	3,658	2,073	1,910	1,511	1,117
Franklin	3,211	5,756	5 808	8,090	6 291	7 283	10,135
Fulton	2,681	7,182	7,630	13.176	11,378	15,389	20,344
Gallia	952	514	821	1,552	516	951	1,034
Geauga	2,735	645	1,143	2 255	1,188	1,207	2,747
Greene	1,995	6,621	9 212	11,256	6,126	8,845	3.890
Guernsey	672	342	645	1,537	353	590	579
Hamilton	1,048	3,161	4.087	6,256	5,644	9,604	3,621
Hancock	1,923	3,211	12,233	23,238	7,903	14,925	19,595
Hardin	334	1,291	6,745	14,264	5,060	5,682	8,019
Harrison	1.219	315	573	2,098	479	219	498
Henry	1,935	6,326	8.201	9,931	7,877	10,443	13,345
Highland	883	1,811	3,022	5,361	2,023	3,361	1,700
Hocking	895	671	1,079	1,209	361	876	406
Holmes	12,084	3,946	4 369	13,275	9,670	9,239	8.016
Huron	7,175	7,878	4,769	11,912	8,156	9,682	13 579
Jackson	141	136	134	98	17	68	120
Jefferson	3,036	823	1,935	4,664	1,773	1,396	2,780
Knox	7,242	3,775	9,511	16,144	8,570	11,454	10,568
Lake	984	353	474	1,972	587	556	646
Lawrence	507	339	252	940	595	804	876
Licking	4,802	6,576	10,436	9,794	2 610	5,095	4 714
Logan	498	9,667	13.049	13,772	11,142	8,814	10,753
Lorain	4,689	4,343	2,753	5,294	3,425	2 352	2 198
Lucas	2,081	3,554	4,381	6,811	5 313	6,369	7,046
Madison	2.618	4,065	4 186	6 939	4.788	6,598	4.379
Mahoning	3,153	2,292	5,960	9,346	5,366	2 792	3,032
Marion	3,614	4,214	6 861	15.088	7,664	8,905	8,629
Medina	5,316	6,218	9,661	15,602	7,928	5,861	9,066
Meigs	595	363	1,765	2 314	616	654	1,022
Mercer	757	960	10,081	16,020	9,369	8,910	13 351
Miami	941	1,665	10,012	15,212	9,841	753	11.178
Monroe	279	64	459	472	93	285	558
Montgomery	2,041	4,194	9,959	20,678	12,418	19,582	10,495
Morgan	855	776	2,435	2,165	818	1,188	1.855
Morrow	8,205	8,343	7,746	9,950	5,414	3,716	4 990
Muskingum	2,617	1,050	2,590	2,120	786	1,832	1,096
Noble	285	384	1,099	1,314	341	365	355
Ottawa	2,186	3,017	527	4,501	4.572	3,380	6,592
Paulding	486	1,347	2,403	5,675	2,767	5,251	4,173
Perry	1,005	508	1,237	1,651	438	1,332	806
Pickaway	2,595	5,294	8.505	7,935	4,671	4,806	3,241
Pike	943	1,444	1,755	1,510	624	686	808
Portage	5,384	2,104	8,029	20,968	6,561	5,874	7,736
Preble	2,318	4,144	9,610	14,329	7,925	11,064	7.249

Comparative Table Showing Production of Clover, Etc.—Concluded.

Counties.	Tons of hay.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	955	2,654	7 412	12.096	6,912	10,226	12,805
Richland	12,199	9 499	10,140	20.488	6,306	7,209	12,367
Ross	2.135	3,558	5,932	5.273	1,832	3,306	2,382
Sandusky	6,562	7,517	7,973	16.285	16,061	17 536	21,014
Scioto	1,162	1,315	1,274	1 865	809	717	937
Seneca	3,438	7 473	11,799	28.525	15,091	18,566	29 881
Shelby	336	1,854	9,934	12.076	9,371	10,928	12,667
Stark	10,351	7,816	10 073	27,494	13,022	7,217	11,565
Summit	5,198	2.966	8.081	14.549	8,864	12,371	7,521
Trumbull	5.607	2,455	2 711	4,656	20.478	2.218	1,831
Tuscarawas	3.262	2,364	2,055	8.431	2,359	2,290	8,857
Union	1,763	3.115	6,205	11,794	5 995	7.772	7,339
Van Wert	585	860	6,865	13.309	4,886	7,367	8,427
Vinton	258	301	542	548	192	353	287
Warren	1 928	5,435	6,754	10.532	3 367	6,387	12,364
Washington	755	787	2.034	3,038	883	2,265	3,520
Wayne	17,941	11,188	12,758	33 169	22,936	14,446	16.035
Williams	3,588	7,463	8 151	16,445	10 057	13,694	17.472
Wood	3,277	6,289	5,561	12 657	10,878	14,375	13,833
Wyandot	2,185	4,150	8,679	16.249	5,505	6,583	11,987
Totals	252,507	299,377	506,589	865,333	487.513	544,546	602 152

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR SEVEN YEARS.

Counties.	Bushels of seed.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890
Adams	1,585	1,729	1,020	3,498	446	1,100	177
Allen	361	629	6,320	14,135	2,464	1,843	3.202
Ashland	3,726	6,137	3,812	5,086	1,107	4,862	4,545
Ashtabula	285	60	11	117	3	29	9
Athens	35	31	93	201	22	66	16
Auglaize	255	1,143	3,264	8 913	3,310	743	1,662
Belmont	422	133	127	1,337	14	10	25
Brown	270	639	675	408	47	127	11
Butler	1,751	4.518	4,884	5 225	894	4.899	664
Carroll	624	643	275	2,501	418	375	197
Champaign	229	4,291	8,895	18,149	1,561	1 845	5,660
Clark	514	7,153	7,742	17,651	3,497	5,280	4 804
Clermont	179	578	95	....	8	139	327
Clinton	2,487	10,293	3,405	2,790	1,241	2,158	425
Columbiana	328	1,638	562	1.333	88	255	169
Coshocton	1,540	1,178	800	2,048	149	1,626	1,021
Crawford	3,459	15.820	7,304	7,673	1,828	1,389	7,489
Cuyahoga	58	60	11	15	2	....	5
Darke	700	5,236	7,938	14,462	7,143	5,616	4,484
Defiance	2,317	13 903	14,694	15,475	4,412	4,990	7,112
Delaware	678	3,200	5,620	4.886	311	1,259	1 264
Erie	1,488	3,227	1,069	2,024	782	1,188	1.864
Fairfield	1,289	12,844	20 573	20.040	3.826	3,093	1 791
Fayette	638	4.603	2.108	1,657	813	622	290
Franklin	602	8,078	6.003	8,713	1.947	2 729	6.534
Fulton	3,236	5,314	5.521	10 481	3,882	4 431	9 [illegible]05
Gallia	372	84	145	278	51	247	7
Geauga	242	6	68	11	22	9	86
Greene	821	10,684	5.613	9,516	2,870	4,870	1.282
Guernsey	242	43	123	493	8	49	39
Hamilton	194	1,398	843	985	231	555	138
Hancock	2,526	2,986	14 890	15 729	3.255	3,367	9 147
Hardin	214	608	7,985	11,266	1 571	730	2,632
Harrison	716	143	169	1,022	47	20	24
Henry	2,663	8,588	10,484	11,714	3,591	3,379	8.220
Highland	1,548	5,174	3,094	3,679	1 527	2.415	535
Hocking	302	391	1,076	1,559	284	536	54
Holmes	6,177	5,832	1,875	4,121	1,287	5,107	2,591
Huron	3,076	9,986	1,298	4 990	832	2,976	7,515
Jackson	....	6	2	....	....	....	....
Jefferson	1,689	174	168	1,800	414	63	551
Knox	3,565	4,816	4,716	10,085	766	1,034	1,724
Lake	60	186	30	22	10	12	....
Lawrence	107	161	3	177	19	53	20
Licking	1,248	8,548	10,876	9,724	72	876	458
Logan	207	1,465	14,245	10,247	2,754	626	2,925
Lorain	638	1,083	387	822	281	535	655
Lucas	1,059	2,745	2.180	4.800	1,412	1,097	2,235
Madison	902	8,884	4,205	4,506	442	1,163	747
Mahoning	360	1.196	763	902	263	275	129
Marion	1,980	8,234	8 532	10,257	323	1,513	4,042
Medina	1,473	2,466	2,025	3,739	530	1,822	1,115
Meigs	36	48	106	111	10	25	33
Mercer	237	1,467	4,734	7 660	5 831	1,459	2,328
Miami	482	2,336	3,109	13,565	2,647	4,907	5,637
Monroe	33	7	76	172	....	18	67
Montgomery	888	3,589	4,605	10,737	3,066	6,741	2,217
Morgan	166	224	456	575	31	165	37
Morrow	2,350	13.370	8.737	6,830	396	443	2 182
Muskingum	587	427	853	822	12	176	9
Noble	28	152	128	188	2	2	8
Ottawa	1,635	1,592	191	830	723	767	670
Paulding	513	2,047	2,606	8,234	1,656	2,805	3,238
Perry	967	1,326	2,117	1,624	355	835	359
Pickaway	1,579	7,735	12,957	13,361	5,274	5,517	1,634
Pike	588	1,278	2,078	1.594	929	789	200
Portage	945	478	561	2,027	859	2,291	1,281
Preble	1,307	6,076	6,814	8,438	3,339	5,064	1,364

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER, ETC.—Concluded.

Counties.	Bushels of seed.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	793	1,564	4,831	12,200	2,207	1,557	5,605
Richland	4,248	10,063	4,878	6 593	1,385	2,960	4,573
Ross	1,709	5,792	8,699	5,808	2,379	3,241	758
Sandusky	3,503	3,775	4,764	7,446	2,692	2,823	4,418
Scioto	565	700	324	373	183	128	49
Seneca	3,412	12,549	14,378	14,960	3,357	5,231	6,846
Shelby	288	1,558	5,312	6 678	2,917	2,105	3,113
Stark	1.866	6,084	1,202	1,645	1,282	2,739	2,151
Summit	655	721	525	1,377	297	1,404	750
Trumbull	511	64	34	178	144	233	49
Tuscarawas	1,654	3,547	776	3,980	330	1,720	1,128
Union	608	3,994	3,686	4,967	395	1,057	753
Van Wert	380	974	2,270	5,069	2,906	1,584	1,828
Vinton	19	212	335	238	37	34	5
Warren	896	5,981	1,191	2,153	563	1,301	64
Washington	171	308	439	623	56	568	60
Wayne	5,637	9,812	4 316	4,135	1,855	6.065	4.510
Williams	4,621	7,866	8 170	14,777	5 396	7,336	9,034
Wood	4,032	5,089	6,708	18,801	3,345	5,149	8,479
Wyandot	1.864	7,520	10,890	9,226	1,095	2,103	4,094
Totals	111,210	339,290	342,472	489,258	121,028	165,145	191,264

COMPARATIVE TABLE SHOWING USE AND COST OF COMMERCIAL FERTILIZER FOR FIVE YEARS.

Counties.	Pounds used during 1896.	Cost of for 1896.	Pounds used during 1895.	Cost of for 1895.	Pounds used during 1894.	Cost of for 1894.	Pounds used during 1893.	Cost of for 1893.	Pounds used during 1892.	Cost of for 1892.
Adams	2,101,680	$24,330	2,381,250	$31,320	2,569,700	$33,441	2,785,820	$38,422	2,766,550	$37,478
Allen	180,475	2,282	369,900	4,304	273,100	1,801	146,140	1,684	152,130	1,976
Ashland	1,382.973	16 078	1,751,900	21,418	1,401,600	23,723	1,163,585	15,172	1,320,330	16 548
Ashtabula	3,468,633	53,986	4,668,300	58,284	3,690,504	50,085	3,343,866	42,205	3,625,985	47,873
Athens	1,414,960	16,541	1,709,990	18,635	1,104,640	16,004	1,291,083	15,560	1,147,436	15,991
Auglaize	25,500	281	19,800	257	4,100	83	......	......	8,800	40
Belmont	1,777,607	18,589	1.623,377	19,752	1,082,648	13,420	1,168,036	18,951	1,299 550	17,879
Brown	1,038,700	10,853	1,671,600	18,074	1,839,765	16,975	1,481,161	19,970	1,585,814	19,626
Butler	143,250	1,670	145,450	1 790	186,625	1,837	120.690	1 300	272,500	3,232
Carroll	1,213,670	13,589	1,053,103	12,503	852,648	11,491	819,830	11,390	893,150	14,893
Champaign	788,630	9,162	1,354,070	13,827	694 750	8,142	744,540	7,612	564,940	7,880
Clark	396,708	4,677	578,500	7,794	246,016	4,069	178 450	2,467	237,778	3,155
Clermont	649,535	7,153	1,122,980	11,714	995,718	12,310	975,553	15,802	1,231,420	17.720
Clinton	336,560	4,794	795,230	12,405	420,000	6,237	727,011	10,650	895,420	13,162
Columbiana	2,763,300	32,069	2,563.700	30,936	2,183,950	30,147	2,258,595	29,624	2,339,126	28,735
Coshocton	827,454	8,208	1,286,006	13,449	760,186	10,989	747,825	9 326	680,550	7,829
Crawford	711,020	8,554	1,116,918	13,444	707,600	9,346	528 610	7,231	767,400	10,481
Cuyahoga	3 539,340	38,240	3,351,100	45,206	3,974,950	43,195	3,743,960	47,670	3 422,040	46,859
Darke	582 515	7,168	926,900	12,648	527,980	7,190	415,980	5 866	527,000	7,279
Defiance	32,000	458	46,500	871	45,320	650	19,000	260	18,550	274
Delaware	295,000	2,665	665,680	8,206	407,430	6,691	399,459	12,942	543,450	6,778
Erie	683,290	6,698	536 501	7,117	344,500	4,724	430,424	5,926	824,815	10 531
Fairfield	1,408,600	19,786	2,503 250	32,184	1,394,252	19,431	1,257,030	14,385	1,689,328	14.341
Fayette	596,436	4,598	745,700	7,753	406,800	4,475	316,064	4,122	256,604	4,200
Franklin	252,750	2,574	621,375	5,456	273,816	2,857	278,450	3,590	263,450	3,589
Fulton	28,900	631	86,100	1,027	102,750	748	96,160	1.199	143,600	2,914
Gallia	1,750,005	18,267	1,654,000	17,254	1,298,476	14 416	1,435,245	17 831	1,104,490	14,459
Geauga	1,882,823	26,211	2,298,515	39,324	1 951,406	26,736	1,944,155	25,147	1,819,022	24,792
Greene	123,300	1,379	575,900	6,526	332,620	3,953	304,800	4,029	353,570	4,770
Guernsey	1,402,200	16,932	1,681,505	18,939	987,435	10,515	1,064,792	12 767	1,159,680	15,070
Hamilton	......	421	......	......	......	......	......	12,910	......	78
Hancock	263,555	3,097	449,340	7,116	213,400	2,933	189,750	2,571	25,720	3,367
Hardin	100,200	774	175,900	1,898	65,400	965	23,700	363	43 750	589
Harrison	726,105	9,537	737,638	9.053	487,350	5,931	455,650	6,536	524,910	7,174
Henry	26,900	527	45,600	630	8,350	108	32,172	530	54,000	712
Highland	2,397.020	26,641	3,149 200	38,238	2,011,750	27,513	2,036 730	29,420	2 216,339	31,248
Hocking	2,002,923	20,029	1,622,515	17,776	1,402,640	16,226	1.398 065	17,187	1,598,115	19,786

Holmes	1,210,950	11 872	1.408,280	15,293	667,224	7,405	924,022	10,371	933,414	12,589
Huron	2 014,068	2.346	2,735.670	33 820	1,939,160	21,161	1,862,865	20 072	2,752 824	26,151
Jackson	1,484,910	16.799	2.086.300	22 047	1,469,915	18,524	1,308,360	17,512	1 190.115	16,809
Jefferson	1,221 682	14,558	1,601.339	14,499	899,400	9,332	802,790	11,836	884 650	22,459
Knox	1,405 140	13 604	2,110,998	23,261	2 041,318	16.244	1,334,675	14,018	1,398,315	19.583
Lake	681,700	8.867	966,400	11 830	1.066.800	13,836	1,025.100	12 548	803,110	13.642
Lawrence	211,125	2,924	162,995	2,109	85 600	1.296	124,150	1,449	63.250	945
Licking	1,104,810	12,345	2,013,290	23,155	977,150	12,172	1,125.827	21,723	1,414 510	17.581
Logan	161,300	4 233	160,200	3.149	217.750	6,329	75,300	1,030	132.070	2 079
Lorain	1,740,420	21,356	2,384,951	25,636	1,380,519	23,225	1,424,040	21,229	1,698.046	23.035
Lucas	118,700	1,040	192.900	2,286	178,150	1,679	138,800	2,237	106,700	1,521
Madison			44,000	514	1,000	22	33,600	230	3,000	24
Mahoning	2,965.486	33.698	4,172,897	45,774	2,543,729	34,102	2,330,422	34 018	2,427,241	37,196
Marion	90,910	906	114 012	1,401	16,100	229	22,700	302	38,550	7,657
Medina	3,257.420	37,788	4,417,645	53,960	3 062,000	40,504	3,260,937	41,911	3,740,094	48,482
Meigs	1.955,889	22,429	2,407,869	32,292	1,525,990	23,563	1 809,080	24,332	1,783,150	22.966
Mercer	8.500	165	26,900	339	5,100	68	7,500	167	19,200	257
Miami	672,460	7,136	661.043	8,188	397,160	4.522	367,500	4,919	392 800	5,487
Monroe	1.585.502	17,817	1.540.260	17,740	1,053.431	13,315	1,080,584	14 124	1,134,820	14,602
Montgomery	1,437.850	15,706	1,525 930	20,234	997.010	13 254	1,139,540	14,750	1 546 228	19.636
Morgan	1,942,650	20.869	2,432 358	31,733	1.743,561	21,502	1,531,670	19,291	1,336,609	17,387
Morrow	856 191	8,654	1,669,270	24.595	947,100	12,401	872,710	14,673	1,087.662	13,073
Muskingum	2.648,795	27,043	2,892.991	31 077	1,502.046	23,781	1.714,000	21 356	2,009 678	23 198
Noble	1,090,089	11,778	1,186,620	13,160	470.310	13,926	476,980	6,632	538,775	8,397
Ottawa	600		5.800	86	2,500	35	7,000	91	3,400	717
Paulding	4.920	71	5,300	60			5,800	79	29,200	373
Perry	2,751,630	34,332	3,033 916	35,527	2,115,580	25.325	2,014,200	24,572	2,064,070	27,098
Pickaway	543.050	9.055	378.500	5,154	184,044	4,141	258,200	3,182	249,500	3,937
Pike	1,771,050	17,634	1,522,140	18.931	1,547,080	22,558	1,431,400	23,665	1,614,800	20,363
Portage	3,208,740	39,484	3,476,300	45,945	2,778,452	39,194	2,435,954	33,095	2,793.395	37,419
Preble	3,581,750	36,035	3,943,100	45,085	3,285,450	33,411	3,079,140	32,937	2,775,170	34.992
Putnam			5,000	68	2.900	25			800	808
Richland	1.748,700	16,518	2.775 207	20.313	1,285,430	14,047	1,232 380	13,471	1,614,370	18,056
Ross	1.352,850	14 789	1.608,255	20,818	1,504.360	16 374	1.098,400	13.372	1,049,688	13,460
Sandusky	272 085	2,740	181,226	2,465	121.850	2,578	176,750	2,257	121,400	1,686
Scioto	1.913.312	22,519	1,607,544	19.126	1,319.295	17,300	1,674,215	22,292	2,004.296	24,884
Seneca	1 458,930	15.776	2,623 150	27 150	969,900	10,930	1 232 830	13,588	1,285,450	15,414
Shelby	533 670	11,064	731,750	9 664	221,950	2,665	71,300	980	142,100	1,989
Stark	2,157,900	20,186	2,695,854	36,396	1,913,388	25.658	1,722,310	23,647	1,911,210	26,665
Summit	1,613.981	20 074	165,105	20,303	1.302,750	16.308	1,231,800	17.582	1,510.000	19,717
Trumbull	2,427 010	20,200	3,533,860	45,604	2,802,490	38,061	2,635,404	37,712	2,567,170	3,590
Tuscarawas	1,054,430	11,119	1,117,375	13,035	755,485	8,001	666,055	8 805	729.325	9,423
Union	84,050	1,000	153,900	1,908	339 600	2,592	69,700	860	211,800	1,435
Van Wert			600	7	1,000		2,000	28	4,400	97
Vinton	1,294,950	13.369	1,589,939	17,997	1,152,383	14,984	1,178 276	15,655	1,021,900	13.891
Warren	392,150	4,982	837,200	10,089	653,300	7,560	706,050	10,227	937,112	15,032
Washington	3,294 850	37.451	4,260,500	50,646	3,025.166	39,931	2,861,420	38,684	2,399,180	32 018
Wayne	3,152,538	34,966	4,128,876	46,199	2,752,086	33,571	2,974,750	35,403	3,053,980	39,039
Williams	116,700	1,422	235 340	2,799	52,200	613	36,350	525	61,950	880
Wood	319,300	18,830	333 380	3,574	525,700	2,832	234,560	1,947	385,200	5,365
Wyandot	153.700	1,669	348.480	3,920	180.000	2,538	128,200	1,445	135,000	1,634
Totals	102,383,910	$1,168,657	126 297,999	$1,529,088	91.290,340	$1,162,981	88,279,477	$1,180,448	91,488,015	$1,229.676

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO FOR SEVEN YEARS.

Counties.	Bushels (shelled.)						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	1 156 639	646.711	850.644	641,597	748,599	855,706	653,047
Allen	1 538,141	1,314,789	1,246,444	970,477	924,822	1,255.294	643,051
Ashland	968,200	911.977	463,112	465,285	615,807	714.046	504,377
Ashtabula	558,988	618,204	711 620	130,104	255,769	459 455	150,364
Athens	515,263	498,507	421,385	420,829	450,869	494.990	327,559
Auglaize	2,012,775	1 347,947	1,259,745	1,049,422	1,132,936	1,132,127	762.424
Belmont	1,123,655	824,700	521,784	849,848	926,548	918,058	675.537
Brown	1,413,209	1.020,024	955,391	890,880	994,605	1,123,758	886,248
Butler	2,855,940	1,572,733	1,366,373	400,763	545.177	1,824,244	1,149,168
Carroll	612,753	496,521	271.203	393,892	537,927	504,397	366,535
Champaign	2,748,826	1,720,523	1,968,895	1,741,750	2,012,820	2,012.054	1,086,593
Clark	2,419,539	1,621,740	1 703,073	1,691,658	1,729,942	1,581,541	906,394
Clermont	1,094,808	1,189,538	636,340	645.313	818,251	817,396	683,662
Clinton	2,902,243	2,270,012	2,092 341	1,494.252	1,888,142	1,806,124	1,231,092
Columbiana	797,793	805,417	427 170	553.034	543,245	590 081	453,853
Coshocton	1,026,726	1,047,137	614,108	754,924	827.100	944.749	711,436
Crawford	1,375,642	1,514,750	1,083,403	887,158	951,014	961.586	823,721
Cuyahoga	322,106	402,182	277.535	243,684	212,815	294,156	203,921
Darke	4,238,209	2,609,091	2,312,433	1,951,414	2.065.136	2.473,589	1,381,943
Defiance	1,235,429	817,674	801,304	710,529	322,276	940,444	550,732
Delaware	1,757.653	1,056.614	1,243,620	957,366	1 033,741	1.202 275	875,021
Erie	708,363	566,006	684 943	452,103	396,409	450.166	362,784
Fairfield	2,241,576	1 679,819	1,885,645	1,822,385	1,980 382	1,723,339	1,342,478
Fayette	2,937,730	1,819,871	1 954,960	1,929,405	2,618,643	2,143,115	1,296,405
Franklin	3 254.039	2,280,794	2.261.157	2,045,502	2.483,590	2 183.216	1 899 245
Fulton	1,230,188	946,941	770 799	833,472	376.459	962,272	827,272
Gallia	681,697	519,875	470,702	501,052	514,195	578,475	452.914
Geauga	357,722	319,214	252 811	194,690	178 311	243 217	180 745
Greene	3,535,217	2,173,452	2 155 070	797,278	2,035.903	2.029,663	1,178.224
Guernsey	780,770	685.910	521,725	567,740	586.087	631,910	387,047
Hamilton	868,988	553,061	348,343	525,954	578,097	689,164	418,427
Hancock	2 288,577	2,270.751	1,712,219	1,461,092	1 217 807	1,697,182	1,057,080
Hardin	2,055,035	1.274.403	1,237,701	828.292	1,037 153	1,038,381	562,999
Harrison	626,528	566 971	327,067	422.243	592,066	563,236	434,506
Henry	2,398,694	1,964 750	1,809 368	1,423,866	660.206	1,376,851	992,352
Highland	2,132,133	1,427.075	1,325,736	127,895	1,248.069	1,522,613	1,142,284
Hocking	520,207	417 142	421,497	362,892	378 994	375,072	296,447
Holmes	852,011	695,059	437,789	482,660	686 827	782,664	605,713
Huron	1,080,982	1,061,286	706.037	644,419	645,104	627,870	519,375
Jackson	432,923	278,399	349,220	211,874	293.387	268,227	246,865
Jefferson	649,[illegible]99	535,160	258.869	414,223	563,266	564,536	434,925
Knox	1,420,425	1.108,078	718.143	823,830	1,035,182	1,109.050	949 307
Lake	227,714	285,149	178.749	144,311	156,415	147,158	106,278
Lawrence	426,023	370,443	355,724	359,335	405.445	408,031	288,534
Licking	601 094	1,651,757	1,536 529	1,619,845	1.581.223	1,713.804	1,282,109
Logan	2,030,260	1,237,751	1,476,866	936,449	1,310,559	1,290,190	659.690
Lorain	686,801	651,603	494.658	382,416	374 866	386,789	311,459
Lucas	880 480	699,385	582,761	543,112	255.047	627,179	590,216
Madison	3,916,307	2,812,326	3,268 050	2,745,469	2,494,673	2,570,687	1,828.430
Mahoning	2,434,464	476,950	388.234	398,668	358 981	411,411	324,357
Marion	2.080,057	1 834,453	1.666,897	1,222,733	1,422.538	1,345,615	794.835
Medina	817,701	687,115	471 318	451 808	522,823	649,209	394.262
Meigs	509,077	441,688	330 353	385,341	426,818	433,336	352 679
Mercer	1,989.803	1,533,879	1,472.242	964,663	1,054.498	1,501,346	630,873
Miami	2 705.212	1.440,979	1,502.462	1.594,468	1,881 041	1,748,568	939,636
Monroe	596,458	517,222	282 026	368.498	532 315	570,367	305,981
Montgomery	2,642.318	1,442 263	1 547,585	1,151,464	1,161,650	1,888.576	739,615
Morgan	662 452	592.137	400,671	574.347	512,405	571.745	359.137
Morrow	1,007,102	1,004,100	784 083	650,708	691.654	765,971	590 605
Muskingum	1,268,634	1,091,455	296,294	953,001	1,088,306	985.246	693.128
Noble	688,186	629,916	394,762	514,809	557,943	667,750	398.164
Ottawa	921,456	853 920	477,662	375,293	403,414	477.401	489,444
Paulding	1,581,195	1,473 627	874,654	861,361	546,449	996,905	633 466
Perry	1,246,476	587,840	484,232	480,328	589,789	516.447	402.357
Pickaway	4,020,015	2.641,930	2,793,610	2,817,572	2,847,562	3.166,418	2,423 683
Pike	1,030,174	590.062	932,635	476,750	690,179	639,080	548.645
Portage	637,373	563,746	417.983	417,922	360,334	471,898	395.019
Preble	2,616.078	1,673,061	1,712,613	1,212,531	1,587,571	1,[illegible]79,052	777 258

Comparative Table Showing Production of Corn, Etc —Concluded.

Counties	Bushels (shelled.)						
	1896	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	2,398.700	2,482 136	2,003,212	1,736,568	1,130,441	1,707,238	1,297.461
Richland	1,089,980	1,092,156	651,701	594.399	807 572	838.381	612,932
Ross	3,160.790	2,034,469	2,497,783	1,866,638	1.779,386	2,307,884	2,031.784
Sandusky	1,496,354	1,562,198	1,273,177	984,078	826.975	1,337,646	832.637
Scioto	644,455	716.036	838,800	529,879	710,322	621.052	625 972
Seneca	1.891,697	1,806 580	1,472,872	1,136,157	975.924	1,400,739	925 103
Shelby	2,206,410	1,288,781	1.542,529	915,715	1,255,037	1.475,850	700.392
Stark	1,434,023	1,425,923	724.204	766,205	948.792	1.075,221	793.239
Summit	791,030	728,837	453,925	466,096	463,667	605,824	429,063
Trumbull	640,269	603,299	432,568	358,074	271,838	365,887	289.534
Tuscarawas	864.204	891,503	506,476	583,792	693 476	727.276	531,420
Union	2.260,187	1,438,152	1,437,624	1,070.589	1,323,909	1,307,792	583,542
Van Wert	2,046,000	2,005,548	1,850,425	1,319,471	1,025,489	1,883,800	1.196,464
Vinton	364,855	315 840	309,097	230,309	283,769	258.910	224.641
Warren	3,749,484	1.544 712	1,085,442	1,382,692	1 492,633	1,642.697	786,694
Washington	701,817	661.374	412,611	588.376	692.008	775.404	46,569
Wayne	1 533,031	1,458,537	885,484	716.322	926,272	1,129.765	801,805
Williams	1,045.812	745.642	745,306	663,513	405,836	879,295	730.952
Wood	2,861,704	2 871,727	2,313,169	2,133,908	1,515,235	2,075,381	1,607,937
Wyandot	1,564.721	1,538,340	1,211,825	866,567	900,253	829.142	775,137
Totals	134,796,274	102,447.445	88,805,607	77,229,446	81,892 100	93,832,652	63 694.215

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR SEVEN YEARS.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	....	7	1	....	....	56	....
Allen	185	108	130	207	211	252	532
Ashland	12,848	23,708	23,859	5,712	3.155	9,801	12.167
Ashtabula	502	195	71	....	170	534	268
Athens	....	....	....	....	....	....	....
Auglaize	....	257	20	....	168	837	2,428
Belmont	....	....	....	....	....	....	....
Brown	....	....	....	....	....	....	....
Butler	500	....	35	35	....	40	88
Carroll	....	18	....	28	37	....	....
Champaign	60	....	208	275	....	1,063	2,823
Clark	....	129	5	384	291	371	1,211
Clermont	....	....	....	....	....	....	....
Clinton	....	....	....	15	....	....	....
Columbiana	....	....	....	19	....	44	....
Coshocton	....	....	2	....	....	....	....
Crawford	2,195	3,965	2,691	1,230	1,406	4,721	4,667
Cuyahoga	60	....	....	....	....	....	....
Darke	188	10	269	343	1,111	6,312	17.302
Defiance	10	....	....	....	....	....	50
Delaware	90	....	....	....	16	552	301
Erie	....	....	16	....	....	621	1,373
Fairfield	....	....	....	....	4	....	....
Fayette	....	....	12	4	....	405	865
Franklin	....	....	....	....	20	....	....
Fulton	128	385	176	190	60	217	395
Gallia	5	....	....	....	....	....	....
Geauga	336	653	845	172	99	84	518
Greene	266	261	....	....	....	185	1,260
Guernsey	8	....	3	7	....	....	....
Hamilton	....	....	....	....	....	....	....
Hancock	152	63	....	25	....	676	1,597
Hardin	200	132	235	56	193	153	342
Harrison	....	....	4	1,850	....	14	....
Henry	5	38	....	....	....	....	150
Highland	51	....	....	....	....	....	25
Hocking	4	....	....	31	4	....	....
Holmes	....	....	15	....	....	19	162
Huron	6,469	8,738	2,974	1,398	1,151	3.038	4,268
Jackson	....	2	....	....	....	....	....
Jefferson	5	6	106	12	6	10	8
Knox	40	4	....	....	488	1,654	1,902
Lake	....	....	....	....	....	....	....
Lawrence	....	....	....	....	....	....	30
Licking	....	6	....	....	13	486	1 067
Logan	250	9	50	48	8	280	245
Lorain	2,148	1,235	600	739	174	1,927	3,062
Lucas	90	402	454	115	355	905	2,739
Madison	....	....	....	....	....	....	....
Mahoning	487	332	345	145	202	376	924
Marion	84	40	65	348	264	1,383	1,534
Medina	7,611	8.434	6,547	4,164	7,538	17,755	14,719
Meigs	....	1,991	....	20	....	18	35
Mercer	33	....	....	....	37	612	803
Miami	275	240	624	320	1,242	3,769	15,860
Monroe	36	16	28	4	....	....	....
Montgomery	48	190	189	....	54	1,237	2,771
Morgan	....	....	....	....	....	....	....
Morrow	95	101	95	....	128	2,842	2,599
Muskingum	....	....	....	....	15	....	....
Noble	....	....	....	....	....	....	....
Ottawa	....	....	....	....	25	....	50
Paulding	95	20	17	15	81	30	....
Perry	....	....	2	27	....	3	10
Pickaway	....	....	....	....	....	176	527
Pike	....	....	....	....	....	....	....
Portage	633	796	344	249	16	1.951	2,520
Preble	232	491	907	738	1,996	5,805	9,608

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX, ETC.—Concluded.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	....	....	....	30	....	....	32
Richland	4,900	4,797	2,296	378	387	2.423	2 748
Ross	....	....	....	....	....	....	50
Sandusky	....	....	37	....	2	100	....
Scioto	28	20	....	....	....	....	8
Seneca	202	41	202	....	....	618	918
Shelby	111	....	1,166	166	535	3,378	5,758
Stark	20	66	13	42	....	....	68
Summit	....	....	....	....	....	....	....
Trumbull	1,792	3,106	2,286	744	986	4,208	4 017
Tuscarawas	....	26	7	9	....	15	....
Union	....	....	....	....	55	74	....
Van Wert	....	60	60	....	9	135	503
Vinton	30	....	....	....	....	....	....
Warren	....	....	....	....	5	62	80
Washington	....	....	4	....	....	....	....
Wayne	3,948	5,677	4,824	2,794	2 266	4,162	4,343
Williams	....	....	....	....	....	....	62
Wood	150	418	360	105	20	....	....
Wyandot	....	....	100	....	....	....	....
Totals	47,605	67,223	43,293	23,180	24,961	87,219	132,237

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR SEVEN YEARS.

Counties.	Pounds of fiber.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Allen	......	......	......	......	......	......	6,000
Ashland	986,550	839.407	1,464,600	607.600	204,200	515,800	365,400
Ashtabula	3 300	......	......	......	2 000	14.000	......
Athens	......	......	......	......	4,000	27,500	57,500
Carroll	......	......	......	1,000	......	......	......
Champaign	......	......	......	......	......	10,000	6,000
Clark	......	......	......	15.000	8,500	12,000	16,000
Crawford	8,000	70 000	......	16,000	13,780	87,540	109,000
Darke	......	......	5,700	......	46,000	77,100	142,100
Delaware	......	......	......	......	......	......	10,000
Erie	......	......	......	......	......	1,606	......
Fairfield	......	......	......	......	......	80.000	......
Geauga	5,006	21,930	41.000	4 000	80,000	18,000	21,600
Greene	......	6,000	......	......	......	6.000	5,000
Huron	250,680	502,804	154,208	135,800	65,200	139,100	147,000
Knox	......	......	......	......	......	125	......
Lawrence	......	......	......	......	......	323	......
Licking	......	......	......	......	......	......	4,000
Lorain	41,500	45,000	21,700	18,900	6,000	72,600	75,001
Lucas	......	158	......	......	......	350	1,400
Mahoning	7,000	......	......	4,000	8 000	13,000	51,506
Marion	......	......	......	......	128	23,000	26,000
Medina	121,200	232,300	324,900	196,300	266,010	667,800	707,612
Mercer	......	......	......	......	......	6,000	13,053
Miami	22,000	3,000	21,400	20,100	54,003	226,700	496,260
Montgomery	100	......	9,000	......	......	79,104	134,802
Morrow	......	......	......	......	......	104	......
Portage	56,400	25,000	19,800	6 000	710	63,600	105,300
Preble	......	......	10,000	6,001	34,300	30,070	752,900
Richland	275,400	215,100	93,000	3,112	5,000	71,700	57,990
Sandusky	......	......	......	......	......	10,000	......
Seneca	10	435	......	......	......	......	......
Shelby	......	......	15,000	16,820	9,000	132,900	81,600
Stark	......	......	......	6.000	......	......	......
Trumbull	165.700	102,235	108,300	30,500	15,600	225.580	186,900
Van Wert	......	......	......	......	......	......	6,000
Wayne	275,300	258,560	657 800	198,100	227,130	84,900	145.267
Totals	2,218,146	2,329,929	2,956,508	1,235.233	1 050,191	2,698,102	3,704,101

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO FOR SEVEN YEARS.

Counties.	Tons of hay.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	9,155	9,343	11,889	11,277	13.694	15,003	14.836
Allen	22,519	11,830	27,339	23,629	26.736	27,980	26.048
Ashland	27,655	17 352	36,651	25,032	37,454	44,226	43.657
Ashtabula	47,646	39,327	63,848	72 294	67,175	77,819	69.263
Athens	13,149	7,010	21,760	23,818	28,753	33,387	35.518
Auglaize	16,117	9 803	19,146	17,497	17,455	18,348	20,111
Belmont	27,803	14 567	29,822	32 370	40,800	52,359	54,727
Brown	12,411	12.652	16,937	14,772	17,249	20,401	19,591
Butler	11,287	21 107	17,785	17,334	20.859	22,120	24,770
Carroll	23,305	12,547	31,634	30,077	39 842	41,259	41,241
Champaign	15,340	7,452	16,963	14.430	16,601	21,074	16,663
Clark	16,840	12.345	21,613	22 367	23,265	24,463	25,655
Clermont	11,332	18 107	25.330	3,588	29.138	23 701	25,774
Clinton	12,407	10,590	28 236	20,441	22.291	23.796	23,604
Columbiana	39,786	15 632	44.913	44.556	53,896	60,673	61.770
Coshocton	26,557	13,152	24.860	31.004	42,430	44.332	48,759
Crawford	30,891	20,732	35,508	28 142	36,470	35.382	33,454
Cuyahoga	31,979	23,149	40,123	43,134	48,285	56.863	62,454
Darke	17,323	9,264	16,464	14,215	15,801	21,049	23 385
Defiance	21,487	13 667	21,646	22,066	19,034	18.057	17,067
Delaware	33,590	33,422	55 716	51,316	53,745	88 378	51,238
Erie	12,919	9,634	15 482	15,196	17,097	18,589	20.258
Fairfield	24,092	16 008	30,837	29,298	32,648	31,866	33,524
Fayette	8,442	4.103	14 099	19,690	14,474	14,554	15,494
Franklin	29,686	20 002	41,234	42,160	46,741	45,110	34,963
Fulton	25,979	12,892	24,259	22,840	21,352	15,805	15,232
Gallia	8,985	7,516	12,224	13,304	15,380	16,888	18,965
Geauga	26,852	12,765	40.109	40,124	38,293	42.708	41,530
Greene	33 708	13,926	24,489	21 298	22,609	23,269	20,997
Guernsey	25,704	14,347	29,494	36,329	41.885	47,970	52,234
Hamilton	11,040	14,017	14 627	18.695	21,140	20,111	23,208
Hancock	36,044	25,047	41,533	35.119	34,506	29,471	27,802
Hardin	32,690	12,469	33,450	28 890	26 827	29.363	84,488
Harrison	26,225	12.945	33,287	33,614	38,316	44.529	50,669
Henry	17,182	10 577	16,854	15 174	15,676	12.868	11,505
Highland	14 799	14,278	26 964	19 073	21,794	25.212	31,073
Hocking	10,131	6,444	13 140	13.808	14.923	17,378	17,458
Holmes	19,911	14.668	27,686	24 619	28.525	31,364	37,457
Huron	30,932	26,574	51,278	40.131	45.416	45,577	52,573
Jackson	8,625	6 193	13,388	12,165	14.723	16.582	18,843
Jefferson	25,330	10,853	26,052	27,144	35.871	39.777	38,805
Knox	27,973	13,787	35.102	33,025	42,669	40,566	47,302
Lake	15,900	8,524	15 870	14,938	17,500	19,630	21,826
Lawrence	3,834	4,081	4 083	5,167	6.087	6,478	7,332
Licking	51,919	27,474	51,805	53,875	67,862	71,282	74,176
Logan	22,037	10,313	29,819	27 644	24,519	28,673	26,324
Lorain	36,527	33 482	79 180	53,727	61,826	65,705	69,368
Lucas	14,437	8,552	17,203	14,469	14,396	13.963	14,434
Madison	12,669	8.316	23.445	23.423	22,117	24,775	21,455
Mahoning	26,355	14 264	42.063	53 205	51 643	56.434	61,790
Marion	28,216	12,580	35,229	31 648	31.224	20,878	26,911
Medina	30,007	18,969	46 721	35,920	41 774	46,185	41,399
Meigs	10,720	5,338	16,837	18,894	21 411	22,414	25,723
Mercer	19.078	11,430	29,223	17 430	19.238	22,829	22,023
Miami	12,652	6,981	11,667	11,284	13,995	14,519	16,829
Monroe	12,724	9,201	22.438	23.136	26.498	34,596	35,647
Montgomery	13,257	12,625	18.141	16,542	22,261	20,436	23,302
Morgan	19,633	12 322	22,526	27 350	30.917	36,056	36,906
Morrow	29,591	18,626	49,217	39,499	42,587	48,822	46,792
Muskingum	35,747	18,242	35.262	43,958	51,499	54,468	62,286
Noble	16,370	12,326	23,149	25,861	29,592	38,673	37,997
Ottawa	11,107	10,006	16,026	16,884	17,018	19,083	14,274
Paulding	12,104	7,345	16,141	16,542	14,377	14.025	13,594
Perry	18,788	12.289	22 870	21.396	27,248	29,517	33,131
Pickaway	15,033	8 702	12.192	12,663	13,777	16,472	15,636
Pike	3.378	4,417	7.796	5,705	7,678	16.012	10,577
Portage	21,999	11,275	38 177	43,880	49,816	50,243	50,112
Preble	7,482	8,347	10,699	11,592	13,032	14,067	12,801

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS, ETC.—Concluded.

Counties.	Tons of hay.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	20,193	12,648	37,761	21,180	24,756	20,384	17,383
Richland	27,976	19,070	43,400	28,193	37,125	41,283	46,319
Ross	9,288	5,318	14 013	10.904	13,620	16.174	20,343
Sandusky	23,475	18,422	23,868	15,365	19 421	16.858	13,741
Scioto	8,592	6 872	11,272	15,443	12,054	12 838	14,295
Seneca	24,938	21,752	41,128	25,712	33,183	30.645	29,010
Shelby	15,116	7,692	16,178	13,039	13,813	17,009	16,448
Stark	50,630	25,341	60.165	45,824	61 989	68,647	62,266
Summit	24.144	10.848	32,613	28,245	35.491	37,777	43,745
Trumbull	35,496	24,715	62,081	71 980	75.017	80.071	86,663
Tuscarawas	37,129	23 590	44.626	43,014	55,935	56,790	64,969
Union	19,104	13,181	42,487	38,451	32,362	38,254	31,820
Van Wert	25,155	10,582	30,495	23,842	22,337	23 016	22,938
Vinton	7,686	4,478	12,081	13,966	14,113	14,593	14,594
Warren	12,927	17,248	23,123	20.357	24 985	24,554	23,002
Washington	23,722	14,971	29 485	31.917	40,234	43 539	47,753
Wayne	37,849	16,858	56 252	42,143	47,473	51.617	57,517
Williams	34,187	21,769	27.981	22,325	24.590	22,495	20,606
Wood	30,465	18,758	33 647	30.514	29,403	23,231	26,314
Wyandot	29,925	14,080	30.041	23,028	26 465	25,985	26,981
Totals	1,925,389	1,236,315	2,544,248	1,386,794	2,650,066	2,862,482	2,893,284

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR SEVEN YEARS.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	77,689	38,975	38.209	43.365	25 051	15,832	14.967
Allen	401,856	311,852	382 106	273.388	294,659	322,305	252,529
Ashland	571,221	544,881	598 441	462,819	481.381	550,468	342,944
Ashtabula	870,931	968 118	658,968	432 824	420 912	725,418	344.847
Athens	58,611	31,493	42,979	31,567	19.717	13,664	9.542
Auglaize	509,627	413,973	404,383	305,685	332 991	317,358	280.262
Belmont	228,195	144,951	228 454	246,583	192.985	196,175	162,325
Brown	117,588	118,490	130,405	114,575	85.210	61,915	48,198
Butler	584,500	399,513	293.559	243,972	193,296	191,794	159,252
Carroll	403,262	357.465	370,675	344,890	417,431	489,869	253,599
Champaign	389,235	303.857	258 400	162,719	146.161	238,534	173 335
Clark	224,295	212,029	198.085	154,270	126 973	145.715	120.447
Clermont	157,480	190.139	183,642	146.753	125 192	109,825	78 617
Clinton	183,517	100,621	128,794	88,852	73,638	79,638	83,610
Columbiana	651,654	639,332	599,833	521 166	538,715	649.430	357,108
Coshocton	285,635	231,328	270,444	294,642	243,475	266 338	179,107
Crawford	769,408	1 002,133	752,136	626.156	633.115	540,802	379,672
Cuyahoga	560,811	633.754	566,499	361,944	344,343	438 768	354,227
Darke	690,847	607,100	608,590	513.673	477.628	550 255	449.974
Defiance	417,897	543.670	558,774	378,601	274 653	354,480	367.659
Delaware	522,712	377.566	283,946	219,903	221.317	241,698	175.946
Erie	418,318	451.054	427.375	391.240	288,254	349 309	237.447
Fairfield	227,403	104,263	124.496	91,768	80,010	87,417	72,873
Fayette	156,590	45,668	52.841	36,946	32 672	29.459	30.811
Franklin	462,816	217,992	207.111	155,916	151,719	131.999	154 284
Fulton	632,212	804,581	627,960	563 084	397,125	624,583	523.955
Gallia	41,292	23,279	40,669	47,151	28,653	21.052	8 646
Geauga	526,633	446,775	439,415	283,941	223,607	370,003	274,419
Greene	282,940	193,468	173,284	130.808	100.017	100,379	115.335
Guernsey	174,673	116.344	182,915	192,955	180.529	181,625	127.572
Hamilton	194.096	147.535	105,828	94.023	77,060	55.582	51,097
Hancock	445,754	498,191	472,052	307,126	329.261	345,803	275,195
Hardin	492,936	417,137	370,528	262,035	338,669	274.546	203.866
Harrison	195,070	135 440	194.500	172 709	178.715	173,983	128 987
Henry	403,213	417,420	356,011	279,991	150,376	232,612	218.185
Highland	86,294	43,017	58,899	50,353	30.395	29,032	36 798
Hocking	58,315	23.915	35,029	31,171	20,921	17,849	18.492
Holmes	510,123	507,230	515 572	438,114	441,271	601.449	336.241
Huron	875,667	989 998	992 621	683,970	630 327	780 033	455.023
Jackson	40.613	20,717	33.196	22,731	19,644	14,860	9.128
Jefferson	307,222	223 884	293,466	311,718	284.758	288.317	189 287
Knox	379,608	337,956	351,141	320,495	341,670	372.531	270 480
Lake	239,411	294,598	267,447	232,121	165.651	208.511	208.879
Lawrence	43,048	38,070	42,880	53,966	38,194	18.935	6,154
Licking	673,217	303,111	294.847	231,528	289,005	281.005	179.380
Logan	401,431	188,975	331,508	170,032	204.455	198.499	129 810
Lorain	903,089	813,945	721.001	469 554	426,796	478.748	348.046
Lucas	393,298	447,597	393,938	293.292	211,677	275,509	254.671
Madison	214,235	166.287	127,429	94.091	81,493	107,070	72.120
Mahoning	292,377	565,506	488,695	460,094	344.680	510 911	352 784
Marion	636,250	528,323	511,523	361.590	415,313	405.846	227,746
Medina	760,348	715,886	742,772	441,735	525,046	723.861	460.803
Meigs	69,601	30,043	52,232	47,656	33.512	25 968	18,893
Mercer	703,071	664,059	651,413	480,016	497,715	535,724	413.044
Miami	553,379	468,301	415.013	408,432	386,272	438.245	367,209
Monroe	141,484	84.837	145,595	135,190	119,043	112,078	78,969
Montgomery	463,801	409,472	357,536	320,096	256.308	268,675	345,452
Morgan	77,174	75,885	79,523	74,088	39,093	26,892	29.876
Morrow	540,871	484,332	497,614	362,417	381,453	406 232	292.334
Muskingum	202,956	133,479	191,596	183,778	164,990	132 114	112,184
Noble	101,641	79,965	102,586	80.838	66.464	61.509	46.168
Ottawa	310,856	369.847	285,422	172,195	138.039	131.408	121,624
Paulding	263,481	330,957	233,769	170,769	100,358	138.070	126,767
Perry	68,025	45,220	52,193	33,162	40,667	29.241	22.204
Pickaway	155,121	41.041	42,739	32.074	17,538	24,000	26,997
Pike	47,597	21,904	38,182	24.210	21,254	19.257	21,851
Portage	810,075	628,989	616,094	431,411	422,926	673.013	345 773
Preble	369.609	407,764	370,625	384,498	276,081	265,662	327,825

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS, ETC.—Concluded.

Counties	Number of bushels.						
	1896.	1895.	1894.	1893	1892	1891.	1890.
Putnam	218,941	282.320	277,034	132.630	101,288	135,680	147,407
Richland	759,198	878,506	855,471	665,400	684.374	711.435	488,585
Ross	121,517	41,976	74.183	48 081	32,581	22,985	29 441
Sandusky	580,198	694,488	585,184	397,177	340 089	479,185	319,068
Scioto	98,342	59.984	85,268	66 625	53.837	29,157	20,399
Seneca	778,999	714,182	730,228	550.909	471.451	636.648	434,265
Shelby	621,071	589.958	586,274	407.075	444,379	451,596	355,286
Stark	1.137,122	1,263.340	966,968	779.889	798 071	1,079,115	584,057
Summit	759,733	722,404	636,985	450.800	465,986	682,082	374,548
Trumbull	940,600	930,538	573,461	423,809	304,225	571,885	296,816
Tuscarawas	554,621	541 737	542,650	452,546	457,170	536.353	322,077
Union	503,789	254,670	272,063	161,122	210.055	193,346	125,258
Van Wert	334,965	517,944	718,065	298 318	234,657	345,182	281,958
Vinton	40,745	23.460	32,483	25.558	14,400	13.392	13,462
Warren	399,821	203,010	208,620	196.923	160,380	177,594	161,588
Washington	208,637	110.668	180,966	156.040	124.844	99,810	75,939
Wayne	1,030,683	1,015,500	950 125	696 523	683.414	912,220	515,554
Williams	578,117	727 717	715,623	640.301	436,223	584 845	552,790
Wood	825,611	1,324,520	1,054,242	727,387	514 925	635,603	471,724
Wyandot	510,549	446,320	387,570	275 341	350 605	215,415	211,933
Totals	36,027,464	34,013,739	31,991,896	24.537,989	22 541,473	17,533 935	19,049,033

COMPARATIVE TABLE SHOWING PRODUCTION OF POTATOES IN OHIO FOR SEVEN YEARS.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	41,607	11,109	18,084	16,832	23,350	34,581	15,675
Allen	96,243	67,093	99,723	53 644	55 240	413.778	47,295
Ashland	110,031	145,224	93,217	64,442	67,240	98.403	60,516
Ashtabula	387,018	613 805	306,763	204.063	193,813	242,659	148,552
Athens	63,707	30,598	60,332	58,769	63,917	70 400	41,679
Auglaize	145,105	83,338	116,775	60,689	75,152	105,780	51,591
Belmont	71,118	46,414	108,389	140,346	183 101	138 033	98,483
Brown	91,901	49,616	50,425	21,216	56,658	102,539	43,927
Butler	192,155	144,883	121,501	76.658	106,384	121.746	51,730
Carroll	112,880	89 341	60,915	51,235	65,737	72.894	43,106
Champaign	95,268	56,619	105 864	57,027	86 142	106,866	50 351
Clark	114,023	73,560	75 585	80 437	114.914	105,449	46,163
Clermont	124,647	81,737	82.216	67,118	107,087	107 918	67,049
Clinton	80.926	46,365	54,306	24,316	57 987	72,607	29.364
Columbiana	265,009	326,347	169,694	163.737	236,879	166,352	94,998
Coshocton	123,641	115,390	89,596	63,282	96.662	131,911	78,819
Crawford	134,246	228 213	102.915	70,850	73.915	136.519	63,337
Cuyahoga	492,300	770,201	452,298	405,137	298,134	339,267	348,780
Darke	251,336	149 572	170,106	101 303	125,245	188 661	84 450
Defiance	105,928	87.436	90,554	68 863	48,656	145,140	55,203
Delaware	49,222	48,121	82,766	57,147	65 639	76,543	40,616
Erie	313,530	326,118	170 489	216,522	161,498	273,852	167,609
Fairfield	137,465	74,280	111.800	83,625	148,026	126,021	116,202
Fayette	17,240	9,443	15,846	10,907	31,552	27,968	10,391
Franklin	119,545	86.497	176,931	210,649	333,553	263,136	205,100
Fulton	112,681	148,790	112,759	139,344	68,727	197,218	101,195
Gallia	34,002	31,163	49,672	52,300	60,093	57,463	39,649
Geauga	303,396	391,486	194 325	155,127	107,202	108,257	90,349
Greene	95,699	63,470	209,305	51.076	72.717	84,781	32,703
Guernsey	52,423	20,095	45,034	47.243	56,557	68 332	37,114
Hamilton	456,580	282 563	281,924	327.756	424,669	469,333	240,980
Hancock	117,174	116,110	95,114	68,128	58,008	185,327	80,885
Hardin	125,952	484,884	208 507	106 087	122 215	165 655	83 498
Harrison	31,475	35,286	47,117	37,227	46,093	52,911	37,200
Henry	93,829	85.559	113 572	92,468	53,922	129,663	64,370
Highland	59,551	35,152	36,499	25,535	34,909	65.851	25,080
Hocking	76,213	43,057	53,244	50.765	51,565	67,459	34,608
Holmes	114,280	103,516	74,183	50.801	66,091	111,185	64,189
Huron	168,806	246,954	110,475	103,279	89 747	146,475	96.346
Jackson	45,390	15,515	24,764	16 489	27,883	28 710	12 141
Jefferson	96,305	79,009	65,647	98.300	136,822	130,623	63,396
Knox	103,199	108,101	80,383	53,188	64,492	97.304	60,046
Lake	186,031	255.631	162,467	171.606	99,683	100,479	82,783
Lawrence	42,400	24,306	27,417	42.095	30,790	39,085	16,716
Licking	170,258	104 574	136,196	99,660	143,892	170,563	87.300
Logan	63,674	49,411	86,830	39,129	58,329	72,404	48,320
Lorain	210,742	270,800	181,182	151.285	123,206	163.079	167,494
Lucas	335,961	260,356	210,048	248.175	156,153	326,224	219,421
Madison	32,803	14,385	30,679	26.896	44,733	39,732	18,535
Mahoning	260,534	210,881	171,666	163.656	101,750	134,363	92,460
Marion	90,626	97,006	99,745	54,853	74,488	84,224	34,926
Medina	237,196	270,125	148,562	118.286	91,329	138,244	63.226
Meigs	92,278	55,884	86,550	81,984	117,378	100,708	69,231
Mercer	94.787	54,628	72,156	37,045	46,459	99,085	34.097
Miami	180.909	101,089	131,001	97,214	136,144	137,295	62,523
Monroe	77,965	37,130	94,118	104,605	121,784	116,333	83.376
Montgomery	189,518	93,431	118,813	89,253	120,126	171,223	63,626
Morgan	58,963	35,397	53,144	58,303	70,034	65.083	56,855
Morrow	92,307	112,076	90.431	52,973	54,297	86.052	47,939
Muskingum	114,463	82,136	113.779	112.857	148.913	137.705	70,401
Noble	45 793	26,378	48.977	63.002	77.991	70.680	37,597
Ottawa	50,535	58,804	34.557	29.380	24,185	51.082	30,549
Paulding	85,738	63,214	57 514	50,811	33,002	85.524	27,893
Perry	86,165	50.544	53,792	40.482	74.159	78,423	32,400
Pickaway	63,625	28,140	91 189	69 633	90.691	104,943	45,396
Pike	63.156	20,275	38 592	22,053	66.252	45.397	22,493
Portage	637,293	778,784	482 407	378,517	231.501	331.107	215,231
Preble	106.609	66,178	61 891	37.379	47.381	57,684	27.048

COMPARATIVE TABLE SHOWING PRODUCTION OF POTATOES, ETC.—Concluded.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	133,975	99,537	34,341	65,535	54,797	172,016	64,063
Richland	237 819	253 721	158,051	88.658	104,790	161,158	93,450
Ross	107,610	39,823	125,347	140,307	144,341	148,960	75,624
Sandusky	188,396	235,510	160,912	129.586	102,293	230,893	158,464
Scioto	103,940	57 618	95,255	84.786	87.898	93,924	49,886
Seneca	148 827	194,062	147,993	105,922	98,966	208,771	86,427
Shelby	109,525	57,520	70,271	33,207	49,689	82,751	33,320
Stark	412,341	437,378	240,987	249,616	221.361	237,907	179,238
Summit	287,431	316 211	207,741	160,242	139,320	192,556	122,912
Trumbull	453,529	493,047	280,690	242,470	194,852	202,998	148,590
Tuscarawas	274,624	246,514	170,396	131,705	174,543	196,494	127,316
Union	35,317	20.972	45,110	26,809	31,692	52,286	20,898
Van Wert	86,270	58,120	75,175	37,337	43,321	114,448	39,418
Vinton	51,432	27,558	28,665	30,194	36.405	35,030	27,359
Warren	162,799	58,702	48,970	40,195	59,053	80,158	32,786
Washington	117,174	78 869	150,990	163,630	201,767	193,265	138,757
Wayne	274,178	315,879	177,390	115,030	98,126	166,529	107,933
Williams	70,573	79.983	63,886	68,125	59,662	136,965	64,427
Wood	103,283	86 775	95,878	105,530	82,114	175,748	89,651
Wyandot	80,716	126,330	69,260	42,453	51,303	68,573	35,155
Totals	12,906,134	12,557,717	10,069,933	8,436,397	8,839,136	11,793,716	6,678,245

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR SEVEN YEARS.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	2,410	2,381	1,851	1,772	2.108	2,933	1,717
Allen	6,242	7,275	8 415	3,853	9.247	35,881	6.723
Ashland	4,951	3,270	2.865	2.412	1,523	3.391	4,000
Ashtabula	6 214	10.454	12,018	7,964	5.648	8,406	7,210
Athens	2,606	1,167	134	242	767	545	305
Auglaize	4,709	4,739	7,711	4,741	8.988	22.682	14.031
Belmont	17,825	5,756	3,822	1,756	1.878	1.028	789
Brown	4.432	8.346	4,994	3,734	5,938	5.454	6,761
Butler	1,800	2.212	3.347	1.254	770	1.264	1,897
Carroll	3,074	2,034	1,834	1,256	1,344	1.733	2,188
Champaign	1.815	2,881	5.771	4,111	2,302	9.391	4,336
Clark	11,732	13 623	16 788	16,145	6.752	15.964	8,735
Ciermont	4,011	13,968	10.816	7,190	10,814	13.115	12,619
Clinton	2,269	1,847	2,193	1,174	1.901	3.979	3,814
Columbiana	3,648	3,372	3,778	2,699	2,700	4.655	4,246
Coshocton	11,619	8,606	4,935	2,053	1,467	3.246	3.928
Crawford	1,235	5,579	5,697	4,849	1,933	3,569	3,135
Cuyahoga	9,038	12,520	22.729	15.606	10,951	8.459	14.557
Darke	15,950	10,198	16,612	8.092	11.164	31.252	11,745
Defiance	6,183	11,584	6,986	3,875	4.732	16,287	2,441
Delaware	1,880	2.295	2,986	1.825	817	5.427	3,578
Erie	12,477	12 656	10,682	6,447	3.706	5,798	2,372
Fairfield	7,189	4,061	3,203	1,618	3.788	7,894	7,411
Fayette	5,466	7,154	5,255	2 246	3.351	6,291	6.628
Franklin	4,271	3,658	3,169	1,289	648	3,851	6,872
Fulton	16,193	15,973	10,702	12,577	5,541	19,191	18,869
Gallia	1,403	1,446	491	367	751	1,142	1,088
Geauga	2,415	1,437	1,830	1.089	775	679	1.524
Greene	4,091	7,242	9,254	4,396	6,310	13.074	4,646
Guernsey	4,073	1,801	2,114	1.185	2,519	2.493	3.189
Hamilton	3,460	12,753	13.162	12.972	10.525	14.316	10.390
Hancock	6,173	17 601	17,067	15,406	14.030	47.166	22,293
Hardin	2,825	3.087	8,477	11,414	10.107	22.617	13.936
Harrison	1,501	1,403	892	133	248	356	280
Henry	67,203	74,818	111,350	69.865	42.578	98,934	45.780
Highland	4,778	5 362	3,879	3,432	3.478	7.375	10.667
Hocking	1,740	1,097	1,314	915	1.006	1,069	1.054
Holmes	6.322	7,495	7,500	4,170	2.119	4.336	5.551
Huron	3,697	6,816	5,587	4,654	2,391	9,314	4.235
Jackson	1,036	384	100	40	92	86	92
Jefferson	4,814	1 521	741	692	602	844	800
Knox	7,931	5,467	3,019	2,260	1,701	4,300	6,851
Lake	12,834	12.658	17.833	8,909	7,400	7,550	11,627
Lawrence	615	934	782	603	325	243	228
Licking	22,547	9,617	5,394	2,144	3,189	7,328	13,057
Logan	5,015	5,287	8,614	4,357	4,867	14.436	5 974
Lorain	5 179	4.329	4,529	2,561	921	628	1.448
Lucas	24,206	37 140	28,777	24,613	17,630	33,165	18,237
Madison	3,008	4.765	7,666	3,529	4,658	10,865	6.133
Mahoning	2,646	1.683	4.232	5,415	2.651	2,855	3,221
Marion	1,288	3,092	4.267	3,636	2.122	3,883	1,728
Medina	6,383	4.276	4,133	2.120	474	814	1,425
Meigs	1,876	778	357	450	563	115	574
Mercer	16,239	12.035	20,885	8,587	16.089	69,803	17,514
Miami	9,198	5.046	4.524	2,776	3,100	10,439	3,914
Monroe	13,562	4,073	2,696	1,937	2,707	2.547	2,345
Montgomery	5,066	3,504	4,700	4,139	7,314	9,720	6,358
Morgan	5,232	2,929	2,016	780	1,007	1,375	1,255
Morrow	4,998	7,819	6,551	9,622	7,179	11 522	9,203
Muskingum	15,952	6,280	4 816	4 017	6,721	5,543	7,675
Noble	4,830	2,171	871	818	563	540	1.216
Ottawa	9,734	22.332	14,014	11.647	6.533	12,810	11,955
Paulding	8,802	12,905	8,897	6.943	9.987	28,907	5 811
Perry	5,701	2,220	1,993	1,933	2,734	2,325	2.538
Pickaway	3 216	4,163	2,106	780	1.124	3,144	13,324
Pike	968	511	522	67	19	80	457
Portage	5,328	3,997	3.708	1,927	675	753	1,884
Preble	5,216	3,112	795	4,900	2.744	7.526	3,369

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE, ETC.—Concluded.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	11,088	24,673	22,751	24,415	21,602	65,979	27,054
Richland	7,031	10,231	12,109	9,026	4,599	6,871	14,157
Ross	6,695	4,341	4,779	1,170	679	1,721	2,434
Sandusky	8,805	12,086	13.098	10,527	3,672	12,046	8,755
Scioto	652	941	1,371	36	621	34	252
Seneca	1,061	4,796	3,430	5,072	2,155	7,658	4,544
Shelby	5,727	10 254	10,727	3,530	3,662	10,728	5,003
Stark	3.944	4,144	4,671	1,997	1,021	1,261	1,386
Summit	4,571	3,178	4,958	1,923	499	437	2,446
Trumbull	3,018	5,255	4.532	1,756	1,016	934	2,384
Tuscarawas	5,005	5,130	3,967	1,975	1,817	4,361	3,367
Union	1,470	1,261	3 768	3,709	4,120	13,764	6,014
Van Wert	20,510	23,152	38,055	24,522	42,211	135,708	42,863
Vinton	1,319	676	149	137	90	102	178
Warren	1,665	4,295	3,423	325	2,681	4,389	4,178
Washington	13,763	5,252	3,126	1,551	2,091	1,431	1,451
Wayne	1,785	3,688	5,119	1,400	343	1,594	1,320
Williams	9,376	14,838	7,926	4,339	3,405	8,645	3,128
Wood	15,124	24,651	25,389	35,184	24,176	41,244	36,038
Wyandot	2,545	3,970	5,207	3,329	2,900	12,130	5,533
Totals	617.544	671 807	710.303	508,905	446,696	1,049,840	618,238

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO FOR SEVEN YEARS.

Counties.	Pounds of tobacco.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	1,307,617	917,280	2,859,385	2,233,204	2,886,150	2,782,532	2,503,868
Allen	......	......	......	......	100	......	......
Ashland	4,800	5,600	2,500	9,320	12,897	5,787	5,256
Ashtabula	......	......	......	......	......	200	1,200
Athens	6,010	300	8,800	5,130	20,650	9 200	8.900
Auglaize	7,880	6,580	16 600	23.140	16 480	11,560	7,400
Belmont	1,306,728	639,956	892,332	1,552,846	1,142,864	834,501	655,818
Brown	2,522,900	2,337,186	3,712,431	3,344,460	3,994,293	4,492,314	3 989 106
Butler	371,920	468,091	452,305	546,413	799,202	818,516	455,224
Carroll	......	......	......	......	......	......	......
Champaign	16,474	18 400	15,850	16,600	25,805	5 000	3,360
Clark	121,737	14.566	145,141	153,035	34,445	135,725	116,939
Clermont	1,301,950	1,316,965	2,165,843	1,716,210	2,209,680	2,103,507	2 500,784
Clinton	76,500	16,500	33,500	4,900	26,850	51,696	55,200
Columbiana	......	50	......	......	......	......	......
Coshocton	......	......	200	......	......	......	215
Crawford	......	215	......	550	......	......	......
Cuyahoga	......	......	......	100	250	......	520
Darke	2,700,049	3,309,618	3,909,870	4,603,765	6,566,057	5,990,050	3,750,460
Defiance	3,400	......	2,850	2,240	2,650	4,300	2,000
Delaware	......	......	......	......	191	100	......
Erie	100	......	......	......	1,300	80	......
Fairfield	200	800	40	500	100	......	2.500
Fayette	30	......	......	......	......	200	266
Franklin	20	10	......	......	......	......	740
Fulton	......	......	......	......	......	......	......
Gallia	475,400	483,643	506,253	586,471	455,725	312,905	300,645
Geauga	......	......	75	......	......	......	1,800
Greene	79,650	128,810	214 776	131,908	183 926	272,281	142,630
Guernsey	252,635	99,087	185,285	161,460	166,704	155 167	137,106
Hamilton	174,120	44,599	211,411	226,633	145,058	178,000	233,189
Hancock	......	35	......	60	......	......	......
Hardin	......	......	......	......	......	350	......
Harrison	80	......	4	......	......	......	......
Henry	......	......	100	150	6,425	500	......
Highland	9,570	9,000	52,945	60 925	63,100	75,150	191,415
Hocking	550	......	250	1 200	......	......	......
Holmes	......	......	300	1.000	......	8,675	6,150
Huron	......	......	......	......	2.530	......	100
Jackson	......	......	......	......	65	......	......
Jefferson	192	......	......	......	40	......	......
Knox	......	50	300	......	......	......	......
Lake	2,000	4,000	3,900	......	52,570	9,900	16 500
Lawrence	23,700	40.530	23.775	......	......	22,380	33,925
Licking	......	142	......	......	......	......	......
Logan	31,048	11,755	27,750	19,500	14.000	59,075	71,770
Lorain	......	186	......	......	......	......	40
Lucas	100	......	......	......	......	......	......
Madison	......	600	600	50	......	......	......
Mahoning	......	......	......	......	......	......	......
Marion	......	......	......	......	......	......	25
Medina	110,450	180,627	231,471	270 600	283,266	363.660	265,759
Meigs	10,025	5 000	4 050	690	......	......	5,600
Mercer	......	......	6.394	1.850	7,495	3,700	2,200
Miami	1,126,102	903.259	1,234,815	1.488,893	2,289,255	1 479,835	1 128,270
Monroe	1,496,205	748 578	1 334,203	1.864,740	1,580,663	1.073.317	1.045,445
Montgomery	5,227,139	5,459,681	6,801,150	5,114 350	10,536.274	8,768.756	6,308.998
Morgan	153,525	93,285	283,090	377,454	275,260	231,645	187,773
Morrow	32	......	......	258	......	......	......
Muskingum	9,200	2,500	4,000	8,130	4,860	639	......
Noble	1,321,737	601,408	1,163,432	2,534,436	1,141,891	899,572	762,832
Ottawa	......	......	......	......	......	......	......
Paulding	620	......	4,020	2 775	11 420	8.500	......
Perry	......	3,000	320	1,285	2,850	405	50
Pickaway	40	......	......	150	......	......	......
Pike	27,900	8,100	30,825	21.500	21,825	19.080	20,770
Portage	50	......	......	200	3 800	620	3,200
Preble	1,838,148	2,103 300	2,274 123	1,840,017	2,554,326	2,973,224	1,775,316

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO, ETC.—Concluded.

Counties.	Pounds of tobacco.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	70	....	....	....	100	....	880
Richland	....	....	....	....	....	....	....
Ross	5,450	2,300	26,800	18,230	22,130	13 819	1,220
Sandusky	....	....	....	....	....	....	....
Scioto	237,160	77,400	365,887	228,550	127,150	127,855	203,495
Seneca	....	....	....	75	....	....	85
Shelby	17,000	10,600	35,800	47,620	66,375	89,357	23,225
Stark	....	950	....	....	9,700	4,441	3,650
Summit	....	....	3,600	5,700	5,000	6,350	9,980
Trumbull	....	....	....	....	....	250	3,500
Tuscarawas	300	....	200	....	....	102	2,800
Union	125	125	300	....	....	....	125
Van Wert	....	....	....	....	2.500	700	....
Vinton	25	....	....	....	600	100	100
Warren	1,506,088	4,244.240	1 819 056	1.591.990	2,216,868	1,912,887	1,168,733
Washington	124,613	72,930	269,119	465,981	308,353	181.364	174,592
Wayne	186,825	209,490	235,112	220,750	335 765	262,645	346,161
Williams	....	....	....	3,500	2,000	....	....
Wood	....	....	....	....	....	125	280
Wyandot	....	....	....	....	....	395	40
Totals	24.196,189	24,601,327	31,573,098	31,511,464	40.639,833	36 762,994	28,645,130

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR SEVEN YEARS.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	97,769	199,005	340,920	273.430	270,802	218,724	185.969
Allen	318,955	451,775	540,700	440,895	474,100	652.237	299,645
Ashland	274,753	343,502	640,105	688,750	517,065	589.923	623,570
Ashtabula	69,913	132,485	224,074	252,818	154,956	229.553	240,086
Athens	191,676	130,891	178,271	159 048	160,508	120,636	104.455
Auglaize	365,547	566,304	767,327	548,451	654.145	733,753	419,205
Belmont	331,471	261,776	383,747	406,877	277.229	258,403	277,661
Brown	94.296	290,175	383,181	338,964	377,716	305,053	259.894
Butler	258,458	543,739	956 238	921 809	840.645	1,112.126	732,680
Carroll	138,622	122,356	239,344	276,070	227.240	208,935	209.951
Champaign	275,079	437,118	974,493	838 569	777,953	945.630	616·851
Clark	319,384	442,127	749,065	715,374	641.603	710,434	435,755
Clermont	49,276	216,692	296,308	271,791	279.173	212.861	196,683
Clinton	105,842	367.423	704,341	613,159	622,800	637.352	482·265
Columbiana	220,331	166,151	398,901	454,183	349.139	338.692	340,010
Coshocton	131,234	243,994	496,591	518.748	423.543	421,082	409,775
Crawford	195,698	344,773	512,106	519.764	374,047	455.547	406,439
Cuyahoga	79,742	141,978	226,981	242,137	168.863	193.789	214,231
Darke	572,758	796,963	1,462,139	1,055,095	1,126,323	1,378,656	603,973
Defiance	284,279	452,197	426,500	458.224	364,418	586.028	190,830
Delaware	62 604	159,482	353,012	344,522	303.055	353.098	244.053
Erie	182,373	237.095	379.368	468 621	345,651	429.713	371,272
Fairfield	222,234	406,864	741,640	739.855	782,679	775,257	509,600
Fayette	105,151	351,526	614.692	628,196	643,949	603,418	429,567
Franklin	70,477	363,176	643,579	727,669	772,327	772,408	633,671
Fulton	322,780	436,418	443,658	509,335	413,906	608,032	295,843
Gallia	206,417	192,651	261,210	230,067	234,102	175,318	140,911
Geauga	59,990	66,521	150.508	163,120	117.593	142,908	159,296
Greene	37,382	620,807	959,893	862,980	883.847	845.539	570,224
Guernsey	192,155	162,336	246,724	240.726	220.584	157.821	162,328
Hamilton	48.290	168,583	259.224	280.770	300.625	286,532	199 246
Hancock	401,044	695,428	914,310	711 883	624.546	926.414	504.160
Hardin	219,319	342,380	506.589	424,988	431.393	536,778	354,871
Harrison	159,966	143 405	236.853	239,924	211.911	154.149	155.858
Henry	464,426	583,984	652.101	672,735	407.593	669,613	312,936
Highland	141,729	352,977	594.279	567.631	560.235	497.366	457,914
Hocking	200,905	108,986	148.365	159 295	156.081	113.749	100,067
Holmes	147,498	265,621	325,125	575,048	445.362	559.733	533.252
Huron	300,953	423.678	561 280	648,017	418.343	458,566	468.431
Jackson	109,462	116,945	165.213	124.300	120,344	84.674	84.572
Jefferson	243,564	151,436	259.595	256,503	307,270	213.248	188.731
Knox	166,459	301,897	553,667	644.339	521,833	516.113	483.020
Lake	56,076	56,733	101,012	112.111	92,377	100.879	93 231
Lawrence	51,028	82 561	129,050	102.511	91,688	82,248	61,683
Licking	188,523	276,716	715,916	741 844	615,453	563.004	501,495
Logan	218,496	253.941	610.978	454.599	514,234	689.726	449,084
Lorain	173,616	265.535	404.275	436,815	272,669	403.304	409.644
Lucas	196,192	198,909	248.477	297 543	214,198	249.114	160.402
Madison	48,078	256.573	673,334	622,718	527,967	566.281	351,090
Mahoning	119,012	117,701	303.894	402.860	217,353	206.037	267,871
Marion	136,513	251,082	523,426	483.642	873.453	457,477	307,063
Medina	119,134	289,969	449,172	561,547	373.797	431.427	447,847
Meigs	229,454	205,729	274,612	250,888	254.014	174.102	154,280
Mercer	360.080	556,136	764,392	515.740	573.443	706.310	319.399
Miami	565,799	496,159	1,082,571	951,112	867.635	964,678	545,617
Monroe	219,341	201,800	268,166	272,899	257.409	211.844	186.362
Montgomery	373 714	450.381	893.754	820.514	761.201	935.819	557.372
Morgan	256,094	209.280	231 053	177.113	182.734	130,931	136,591
Morrow	155,373	171,021	272 213	319,824	242,826	241.686	195,060
Muskingum	289,245	241,458	421.218	474,127	373,787	254.933	260.184
Noble	175,716	193,106	223.755	190.761	193,824	146.068	154.582
Ottawa	189,782	304,214	321,063	340,903	149,681	362,019	205.321
Paulding	205.530	395,159	280.151	237,331	197,852	285.522	82.380
Perry	233,332	193,292	262.864	248.519	267.572	198.320	168,604
Pickaway	167 063	628,283	995,617	661,038	934.056	916.796	715,429
Pike	138,219	202,996	275,604	202,270	206,335	180.950	137,324
Portage	130,141	179,519	372,139	422.489	318,225	338.368	424,644
Preble	459,883	568,561	922,364	723,090	621,057	746.919	518,874

Comparative Table Showing Production of Wheat in Ohio for Seven Years—Concluded.

Counties.	Number of bushels.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	444.928	730 761	862.626	614,237	516.528	774,959	396 097
Richland	316,239	423 980	627,919	727.374	531,424	598 408	600,161
Ross	328.800	464.813	883 977	640,796	752,274	650,807	555,550
Sandusky	472.128	677,338	873,048	792,030	589,956	830.766	619,369
Scioto	152,346	153.666	247,476	215,339	202,243	138 537	119,088
Seneca	470,361	766.315	1,065,511	1,055.372	767 815	1.141,921	809,452
Shelby	321.904	452,382	786.867	541,761	605,196	727,943	474 314
Stark	299,291	447,385	903.250	1,021,223	786,472	860.450	937.528
Summit	241.912	247,642	530,332	599,064	437.499	479,843	551.080
Trumbull	55,433	122,770	255.749	285.943	171.013	205,615	267 877
Tuscarawas	201,480	299.399	503,875	527.635	456,942	453,506	465.401
Union	41,869	160.091	393 961	396,265	348,025	422,619	216,774
Van Wert	455,580	618,318	703,355	516,542	413 270	579,746	225,277
Vinton	88,650	78 035	106 679	112,742	100,673	69.531	68 665
Warren	44,267	346,980	585,264	576,531	597,410	616 967	427,463
Washington	425,406	399,742	482,794	434,150	425.255	301,685	269.281
Wayne	306,584	483.730	1,117.768	1,183,590	772.890	948,999	995,573
Williams	221 835	367,543	445.074	486,788	429,240	609,117	287,447
Wood	505,318	638,653	805 540	818,235	556,859	802,827	417.535
Wyandot	221,762	329,670	533,212	436,494	424.276	472,157	388 360
Totals	19,511,788	28,759,647	45,587,534	43,121,599	38,381,598	42,351,767	31,509 676

COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR SEVEN YEARS.

Counties.	Pounds shorn.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Adams	37,878	60,870	65,518	60,442	61,786	58,525	49,800
Allen	76,141	93,728	130,117	130,849	127,609	118,725	99.352
Ashland	203,188	189,455	218,256	231,198	277,685	283,416	282,198
Ashtabula	77,075	11,799	109,793	120,659	120,209	138,622	117,273
Athens	215,524	292,028	361,205	371,618	447,861	448,202	541,673
Auglaize	53,662	68,827	85,365	65 622	71,629	63,337	48,503
Belmont	359,787	452,450	553,076	556,100	648,155	660,028	603,022
Brown	41,270	58,635	59,686	51,855	48,817	44 119	32,448
Butler	25,615	37,997	40,128	46,805	38,027	32,327	39,014
Carroll	314,263	380,926	466,152	474,380	553,210	557,814	516,725
Champaign	104,085	194,617	171,499	175,776	142,139	131,473	121,400
Clark	142 509	205,945	202,824	257,072	290,786	268,108	225,169
Clermont	24,811	27,456	31,110	25,183	21,087	33,892	14,650
Clinton	115,515	4,615	154,632	143.152	130 413	128 366	104,466
Columbiana	170,504	201,560	235,916	280,574	334,511	384,818	364,711
Coshocton	463,164	533,410	580 978	636,198	646,764	669.280	608.798
Crawford	201,365	220,954	223,891	230 871	248,263	271,536	242,700
Cuyahoga	27,188	31,680	34,233	43,295	50,098	48,876	52,520
Darke	24,013	36,032	49,762	40,357	42,720	27,626	25,524
Defiance	71,401	72,826	81,042	76,812	68,614	71,698	62,550
Delaware	210,081	262,103	323.385	245,081	400.871	401,939	403,887
Erie	65,514	75,952	75,379	102,522	104,670	130,738	147,512
Fairfield	58,098	81,434	132,584	144,003	109,837	160,193	150,955
Fayette	44,315	69,980	81,906	106,328	85,188	71,728	83,216
Franklin	44,271	54,448	55.828	66,803	79,084	72,306	77,548
Fulton	96,385	96,278	154,899	186,085	194,930	202,507	151,064
Gallia	61,945	74,951	90,473	86.914	87,569	77,028	75,416
Geauga	66,335	73,155	95,647	89,524	97,736	96,163	91,014
Green	91,028	131,087	136,163	94,759	144,737	122,263	141,972
Guernsey	378,170	439,496	540,090	568,605	642,249	646,077	628,343
Hamilton	....	6,938	8,722	11,949	11,706	10,293	10,098
Hancock	155,955	201,755	219,393	224,107	231,039	249,301	213,071
Hardin	154,248	173,476	210,119	169,343	212,230	225,179	199,219
Harrison	539,373	676,295	812,750	814.892	912,442	874,018	870,246
Henry	36,505	52,332	96,426	59,769	64,663	56,457	65 409
Highland	87,176	114,380	126,252	118,008	101,814	93,597	80,205
Hocking	97,560	102,325	141,630	135,023	157,245	162,051	154,014
Holmes	148,219	148,645	183,859	189,520	198,379	228,399	205,235
Huron	275,803	297,408	334,188	343,096	404,463	417,970	355.308
Jackson	61,257	65,153	70,813	62,654	62,924	58,630	52,887
Jefferson	290,035	354,508	423,182	431,910	484,988	518,275	502,349
Knox	460,255	529,881	574,810	621,218	682,698	721,905	664,832
Lake	38,138	38,457	48,248	39,226	58,429	59,046	78,993
Lawrence	11,131	12,085	20,809	16.804	11,651	12,243	6,703
Licking	527,657	584,445	702,301	759,898	893,405	949,480	961,713
Logan	155,657	200,477	250,431	299,071	280,521	274,522	220,156
Lorain	125,062	126,229	159,756	157,368	199,888	197,912	192,045
Lucas	12,426	16,651	18,981	21,881	27,436	28 327	22,567
Madison	144,390	189,896	213,181	265,499	253,709	304,955	280.105
Mahoning	145,645	218,210	224.929	226,576	215,037	255,831	334,414
Marion	328,133	340,669	391 407	341,086	400,799	385,277	352,510
Medina	159,538	192,333	217,140	210,147	318,816	273,879	290,689
Meigs	137.653	216,315	239.055	213,029	248.028	258,507	229,017
Mercer	38.049	49,194	70,037	70,029	57,053	45,170	38,987
Miami	19,488	21,750	28.572	31,708	36,983	30.508	27,767
Monroe	71,673	108,718	155,480	179,735	184,675	188,016	165,376
Montgomery	7,916	13,033	19,060	22,675	16,272	19,418	13,846
Morgan	334,887	435,234	506,300	511,130	545,856	522 972	516.033
Morrow	322.291	368,913	452,859	472,037	540,181	548,073	523,771
Muskingum	472,490	540,753	567,953	588,831	640,590	595,996	613,623
Noble	243.588	343,803	424,738	384,021	475,456	484,336	404,405
Ottawa	27,860	33,038	36,344	38,143	68,725	49,506	46,678
Paulding	19,153	29,651	29,368	30,021	26,821	21,082	14,070
Perry	156,250	196,777	224,612	204,636	249.513	267,298	231,872
Pickaway	45,628	71,549	....	77	47.791	44.372	53,344
Pike	22,435	27,616	32,038	28,840	23,034	24,383	19,463
Portage	120,350	155,640	182.617	178,005	223.077	222,695	200,041
Preble	33,159	35,359	44,431	39,167	42,335	35,342	29,421

TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR SEVEN YEARS—Concluded.

Counties,	Pounds shorn.						
	1896.	1895.	1894.	1893.	1892.	1891.	1890.
Putnam	34,845	55,330	61,963	56,546	79,307	90,578	45,808
Richland	163,781	215,003	230,000	251,568	282,857	239,520	260,131
Ross	46,679	68.542	63,811	68,282	73,696	75,040	56,928
Sandusky	65,936	105.756	117,395	84,235	107,390	136,646	153,142
Scioto	6,297	8,654	7,776	5,652	5,847	10,504	6,801
Seneca	162,462	204,117	202,496	211,600	238.177	246,735	264,629
Shelby	28,905	47,185	33,822	39,311	35,109	35,717	31,452
Stark	130,354	158.771	194,159	185.899	207,773	205,608	175,905
Summit	41,179	59,435	65,306	66,760	78.970	75,382	78.338
Trumbull	140,458	179.270	211,540	212,160	241,348	239,282	241.922
Tuscarawas	151,606	202,810	262 672	272'365	316 990	298,704	309,099
Union	190,750	234,924	273,134	315,100	283,322	338,504	262,752
Van Wert	43,495	74,037	56,585	62,104	56,653	48,155	56 514
Vinton	110,548	136,158	150,964	38,360	145,997	149 013	163,175
Warren	61,164	69,788	68,108	82.132	69,874	63,193	49,683
Washington	296,001	267,207	349 428	327,404	362,268	392,812	375,170
Wayne	107,401	136,397	153,415	155,215	170,601	156,608	155,551
Williams	135,849	149,616	162,474	164,650	188.565	176,524	166,137
Wood	84,074	97,599	86,055	117,609	120,894	120,066	123,156
Wyandot	368,432	375,920	406,395	346,650	412,110	402,432	409,697
Totals	12,262,439	14,671,104	17,161,826	17,284.073	19,405,224	19,635,824	18,629,961

OHIO STATE FAIR

—AND—

INDUSTRIAL EXPOSITION

Columbus, August 30, 31, September, 1, 2, 3, 1897.

BULLETIN OF ENTRIES AND AWARDS.

The Forty-seventh Annual Ohio State Fair opened under the most favorable conditions on Monday, August 30, continuing until Saturday, September 4. The exhibits in every building and department were selections from the very best produced, and there was nothing that did not possess merit or reflect credit on the state, or that was not in line with the objects of the Exposition in stimulating improvement and progress in agriculture and the arts. Particularly was the show of live stock fine, not so great in numbers as in some former years, but about every recognized breed was represented, and by the finest specimens of the various classes and family types. In machinery and agricultural implements, there was an almost endless variety that filled the hall and private buildings and covered several acres of ground adjacent. This department attracted a great deal of attention and exhibitors reported sales and orders the most satisfactory for many years.

There was not a single department of the Fair not deserving of special mention. There seemed to be nothing lacking to make the Forty seventh Annual the most complete of any within the history of the Board, demonstrating more fully than words can express, the vast strides of improvement being made in our farming, manufacturing, household, art and educational interests. Everybody seemed interested in the exhibits and inquiry for information seemed more general than usual. We believe that the good effects of the Fair will be felt throughout the state and its lessons and advantages realized by people engaged in every industry.

The Fair and Exposition was quite liberally patronized by citizens from all parts of the state, and only words of favorable comment were expressed for the completeness of the Exposition and the admirable arrangement and classification for examination and study.

Wednesday, September 1, was designated "Governor's Day." Lieutenant Governor A. W. Jones and State Officers visited the Fair in a body and were entertained by the Board. Governor Bushnell was absent from the state and could not be present.

Thursday, September 2, was "Secretary of Agriculture Day," so named in honor of Hon. James Wilson, United States Secretary of Agriculture, who was present as the invited guest of the Board and the Nation's representative agriculturist. The Honorable Secretary was cordially received and welcomed, not only by the Board, but by the agricultural organizations in session on the grounds and by visitors generally. At 2 o'clock P. M., on this day he was escorted to the east balcony of the main exposition building, where he delivered the following address before a large concourse of farmers and other citizens:

ADDRESS BY U. S. SECRETARY OF AGRICULTURE, HON. JAMES WILSON.

I am instructed by the President to make the department of agriculture useful to all the sections of our country, so that all may recognize the aims of his administration, as fully as his Ohio neighbors who have known him longest. His heart goes out to the toilers everywhere in our broad land.

An Ohio farmer audience justifies a consideration of farm matters as broad as the Union and as wide as the world. Improved transportation facilities now-a-days have brought the ends of the earth together. The Ohio farmer not only competes with every other farmer in the United States, but, the production of grain, meats, etc., in South America, Africa and Asia have direct bearing upon the prices paid in the United States. Wheat sells higher this year because South American, European and Asiatic crops are not up to the average, and because the home market is improving. It is not only necessary that we study production in the fields throughout the world, but the prices of farm products as influenced by prosperity, or depression in other industries. Cheap food in the United States has been the greatest incentive to manufacturing. The magnitude of farm crops has encouraged railroad and canal building. Inventions have enabled carriers and manufacturers to reduce prices to correspond with the lower prices of farm products. The interests of all classes in the community are inseparably bound together. The body politic cannot prosper if any one of the great industries suffer.

Education in our day along all the lines of our industries is doing much to reduce the cost of living, and to bring within the reach of the humblest citizen, luxuries that were impossible for crowned heads a century ago. We are directly interested in our National foreign commerce; in what we sell to foreign countries and what we buy from them. The Agricultural Department at Washington is supposed to help American farmers in the lines where they are not able to help themselves, and where the individual states cannot well help them.

I have been looking over our purchases from foreign countries, of things we might produce in the United States, and find that sugar, hides, wool, silk, fruits, tea, wines, live animals, rice, hay, flax, hemp, cheese, eggs, wheat, barley, beans and other products, imported each year cost us $382,138,155. We sell cotton, wheat, corn, cattle, lard, bacon, fresh beef, hams, oleomargarine, leaf tobacco, oil cake and other articles, for which we receive $571,899,845. This is a good round sum, but you see the agricultural products we buy make a fearful hole in the income. Education along all lines of human efforts is being carried on to the highest possible perfection in our country. The farmer needs education quite as much as any class in the community. Education with regard to his specialty, and with regard to all the departments of the farm, the soil, plants, animals, and everything pertaining to them, is needed. Farmers realized this many years ago. In 1863, they cried out to congress for help. Congress endowed agricultural colleges with the public lands that were being rapidly donated to transportation companies. More recently congress provided for establishing experiment stations in each state and territory. The object of the agricultural college was to train the farmer's boys and girls in the sciences relating to agriculture and domestic economy, and the object of the experiment station was to give object lessons to and find facts for the farmers of the country. No undertaking of equal importance to the farmers of any country was ever entered into by any people. Agricultural colleges have been more or less successful as they have been manned by more or less competent instructors. Many of these are doing valuable work. They are studying and teaching the sciences that relate to agriculture in all of its branches. Nomenclatures in common use by scientists, by which they comprehend one another in the study of the soil, atmosphere, plants, and animals, are becoming household words among the farmers. The farmers in every state in the Union are giving close attention to the work being done by the colleges and experiment stations. The very best men obtainable should be engaged to man these institutions, so that the farmers may get the best possible education in the applied sciences relating to agriculture, and that each state may have fountain heads to which to apply for help in their struggles with nature, that is ever presenting new sides to them.

The live stock of a state is quite suggestive of the direction in which its industries are tending. I have been studying these industries over a period of ten years, and so I know in what direction the people of Ohio are going with regard to domestic animals on the farm. In 1888, the state had 723,156 horses, valued at $63,132,673. In 1897, the state has 701,933 horses, valued at $25,737,791. This heavy decrease in the value of horses, while the number remains pretty much the same as ten years ago, is quite suggestive. The basis of horse production is grass, grains, good water, and the intelligence of the horse grower. What is true regarding the state of Ohio during the past ten years, may be applied to almost all the other states. The state has not reduced the number of horses very materially, but the value of them has decreased very heavily. The world's market for horses fixes the price, and we are not producing the horses that the world wants to pay good prices for. The heavy draft horse, the coach horse and the saddle horse are wanted at good prices by Europeans. Agents from those countries have searched the United States in vain for supplies along those lines. We have not the horse that the European wants; that is, we have not a sufficient percentage of them. The horse with which the western people improved the country and their farms, and served their purpose admirably, are too small for European demand, although they have many excellencies that commend them to ourselves. We should produce what the people think they want, and not what we think they should buy. We have cheaper grass and grains than any other people who can produce the draft horse, the carriage horse, or the saddle horse fitted for European armies. We have sufficient intelligence to breed, rear and train horses, but we have a preconceived notion about what other people should buy, and we have been producing along that line. If the people of Ohio will carefully study the wants of the people who need horses, this class of domestic animals will be found quite as profitable as any other. The European does not want a speed horse to any great extent, and if large quantities of them are sent abroad, of course, the market price will be reduced. An excellent plan would be for the farmer to do his own farm work with suitable brood mares, and the young animals can earn a considerable proportion of their keeping between the ages of 3 and 5 years, when they will bring a very remunerative price in foreign markets.

A very interesting feature of the Ohio farm is the dairy cow. In 1888, the state had 783,481 head, valued at $22,877,645. In 1897, the state had 752,001 cows, valued at $18,935,385. The number of cows in the state during the past ten years has not been reduced very much, although the reduction has been somewhat gradual. The value has been reduced considerably; and I am unable to find a good reason for this reduction. Great Britain buys $65,000,000 worth of butter every year, and a very large quantity of cheese, but the United States furnishes less than one per cent. of the butter. The cow, in my opinion, is necessary on every farm where grains and roughage are to be consumed entirely, as they should be. In fact, the cow should be the center of the farm system around which all the other domestic animals should revolve, unless the farm is a sheep farm. There are cases where the farmer cannot find milkers for as many cows as would consume the farm products. In such a case sheep give the next best result; but if the farm is to be maintained, and the products grown upon it turned into high priced goods for sale, then the cow or the sheep is an absolute necessity. Nothing that is sold from the farm takes so little from the elements of plant food in the soil as butter does. It is a product that comes from sunshine, and we should certainly aim to produce and sell those things that do the farm the least injury. The Department of Agriculture is now making efforts to familiarize Europeans with the products of American dairies. It is a well understood fact that we make as good butter as any people in the world. In order to prove this, I had the best brands of butter brought to New York from Denmark, France, England, Ireland and Australia. We had these butters scored by an expert from the Chamber of Commerce, in the presence of Englishmen and Americans. We were at that time shipping Minnesota butter to England for the purpose of introducing it to that people. Our Minnesota butter scored 96½ out of a possible 100, the French fresh butter 96¼, the Danish butter 95, the English butter 89, the Australian butter 88, and the Irish butter 84. The Minnesota butter was taken in refrigerator cars from that state to New York and the foreign butter was brought over in refrigerator compartments in steamboats. We had an international contest to settle the question, whether or not Americans make as fine butter as the Europeans do. Everybody is satisfied that, as far as quality is concerned, the United States' best creamery stands at the head. We have been annoyed in foreign markets by spurious dairy products that have been sent there to deceive the European people, and they are naturally suspicious of anything along that line that comes from the United States. We have sent our cheaper butters there that have been used for other purposes than the table. It is the intention of the Agricultural Department to keep shipping fine butters to England until that people become thoroughly satisfied that our butters are as fine as those made anywhere. We are incidentally opening up the way for private shippers, and private shippers are following our lead. The close of this season will show a heavier exportation of butter than has ever gone from the United States. We are learning in what way the British consumer wants the butter presented in that market, the color, packages, etc. I think it will be only a short time until creameries in the United States can ship direct to London on their own account and sell their products in competition with other countries. As soon as we get the way opened up for butter we will take up the exportation of cheese. Congress, and some of the states, have made laws which require these things to be sold for what they really are and under their true names. The law is difficult of execution; but gradually the officers of the Federal and State governments will teach the dealers in filled cheese that "the way of the transgressor is hard." As soon as we have made the British people familiar with our dairy products, we will open up the markets of Continental Europe. Then our next step will be to have perishable products like butter, cheese, fruits, vegetables, etc., sent to Europe by way of the Gulf ports, so that the large territory naturally tributary to the Gulf of Mexico may ship by the most direct route, which, I have no doubt, will finally result in competition with the eastern sea-board. Gentlemen present will remember that a few years ago Congress jettied the mouth of the Mississippi river so that western farmers might ship products to Europe that way. This legislation resulted in making New Orleans the foremost port in the United States, for shipping grain. There is no reason in this day of chilled compartments why all the perishable products I have named should not be taken from refrigerator cars, put into refrigerator compartments in steamboats, and taken abroad to all ports, where steamers may go, successsfully. When I speak of the milking cow all these things come to my mind.

The Department of Agriculture finds that we pay $100,000,000 every year for sugar, made mostly from the sugar beet. We have had seven tons of beet seeds distributed among 22,000, farmers, in twenty-seven of the states, for the purpose of ascertaining where our profitable sugar belt is, so that we may indicate to the capitalist, the laborer, factory men and farmers, where sugar beet culture can be profitably entered into. We will get reports from many of these experimenting farmers in the fall and give the information we receive to the people through farmers' bulletins. The reason why I call your attention to this industry now, is because it is so closely allied to dairying. The pulp of the sugar beet, after the saccharine matter has been removed, is as valuable to the dairy cow as the beets would be before they go to the manufacturer, because the staple products of our country are to such an extent carbonaceous, that the cow will get from corn fodder, timothy hay, corn, and other feed stuffs, all the carbonaceous matter she requires. To illustrate this point: We find it profitable to buy the bi-products of the mills for the dairy cow, in addition to the products raised on the farm, such as bran, oil meal, cotton seed, and the refuse of glucose factories. All of these things are bought because they are highly nitrogenous and suitable to mix with the carbonaceous food, such as I have mentioned. After the sugar factory has taken the carbonaceous matter out of the beet to make sugar, the nitrogenous matter is all left, and this is why I say the pulp or bi-product of the sugar factory, is as valuable to the dairy cow as the whole beet would be before being taken to the factory. See the way these industries dovetail into one another.

I remarked that the $65,000,000 worth of butter purchased by the British each year is almost wholly carbonaceous, and the $100,000,000 worth of sugar that we buy every year is wholly carbonaceous. I suggest that if we sell them that $65,000,000 worth of butter, we are disposing of what comes from the atmosphere, and when we buy that $100,000,000 worth of sugar, we are paying for what comes from foreign atmosphere. I have never heard it questioned but that there is plenty of atmosphere in the United States, plenty of fresh air, plenty of carbon dioxide that enter into the making of our butter and sugar through Nature's processes. If the Ohio farmer cannot so arrange his business as to sell heavily of butter, which does not deplete his acres, he can produce sugar that does not deplete his acres, but will have an effect upon a sensible system of agriculture which will maintain the fertility of his soil and be quite profitable. It may be interesting to note some of the objections to the dairy cow on the farm and the sugar beet on the farm. A great many of us dislike to milk cows. In fact we feel most comfortable when seated on a spring seat behind a pair of good horses, under a canopy top, and with a pair of gloves on; but we have come to a time in the age of the United States when the dairy cow must be milked. She is a necessity on the farm. It is said regarding the sugar beet that labor is too dear in the United States to justify growing them. They must be thinned by hand at least once, until machinery is adapted to do that, and it is doubtful if we can compete with the cheap labor of Europe in this regard. Congress has just come to our relief; but we must consider that the European is compelled to buy heavily of fertilizer in order to keep his land in condition to grow beets. We do not need to buy fertilizer in the United States if we farm properly, and grow leguminous plants to get nitrogen out of the atmosphere, and rotate our crops so that against one year of a depleting crop that draws heavily on plant food, we will have four or five years of repleting grass and clover crops upon which to graze the dairy cow.

I now turn to animals, other than the milking cow, in Ohio. In 1888, you had 967,540 head, valued at $24,766,690. In 1897, you had 631,382 head, valued at $14,135,761. I am unable to see a good reason for the decrease in the number of cattle, other than dairy cows, or for the decrease in value. The Ohio farmer, if he makes his dairy cows the center of his farm system, can afford to raise his calves, provided they are well enough bred through the sire to make early maturing beef cattle. Europeans make beef cattle on land as valuable as land in the state of Ohio, and there is no reason why the Ohio farmer should not raise calves to make early maturing beef. Considerable modification must take place in our western method of making beef, to do it successfully and profitably. We have been in the habit of first maturing our steers and then fattening them for the market. Experiment station people are demonstrating quite successfully, that the young animal grows more rapidly and gives us more pounds of gain, for a given amount of feed, than the older animal. Physiological differences between the two suggest the reason. The young animal accumulates bone and muscle, fat and juice. The old animal accumulates fat and little more. A very young animal will sometimes give you a pound of gain for two pounds of dry matter of feed, while the average amount of gain we get from a mature animal is about one pound for every ten pounds of dry matter of its feed. If the farmers of Ohio will give close attention to breeding their animals, and breed only those that mature early, so that they go to market at two years of age weighing 1,400 pounds, then you will find beef making in Ohio quite as profitable as any other industry.

I now turn to the sheep in Ohio. In 1888, you had 4,106,622 head, which were valued at $10,714,177. There was a slight increase until 1892, when you had 4,468,087 head, valued at $14,724,581. From 1892, until 1897, there was a gradual decrease in numbers when you had 2,368,967 head, valued at $5,877,171. There are more reasons for this decrease regarding your sheep stock than I have time to enter into now. I need not call your attention to the change in public policy in 1892, and to the effect of that change upon the value of the Ohio sheep. Nor is it necessary that I should call your attention to the more recent change in public policy that, no doubt, will have a marked effect upon your sheep stock in the future. Permit me, however, to call your attention to lines of sheep growing that may not be apparent here in Ohio, and that many of you may not accept as good sheep logic. A very large per cent. of the sheep stock in Ohio is the fine wool sheep. I do not think this is the most profitable sheep for you. I believe you should turn attention to the production of the best mutton sheep that have quite high selling wool, incidentally. Fine mutton brings high prices just now. It always will bring good prices. The wool from the Down breeds does not sell as high, scoured, as the wool from the Merinos, but the value of the wool taken from the sheeps' back does not vary very much in the two breeds, while the mutton from the Down sheep is the finest in the world, and the mutton from the Merino sheep must, to say the least, sell for a lower price. Along this line it should be stated that the sheep husbandman must prepare a portion of his lambs for the market before they are a year old. Early maturity is what is best for the farmer regarding sheep, as well as with cattle. You have all the conditions here in Ohio to produce the first-class mutton sheep. The world will always want that kind of product. Cheap grass, and grains give to the American an advantage in the production of mutton sheep that is not had elsewhere in the production of fine mutton. What happened in 1892, has been remedied now in 1897, but it may possibly happen some other time. Voters sometimes change their opinions. You were caught in 1892, with the fine wool sheep. You suffered over 50 per cent. loss between 1892 and 1897. If the pastures of Ohio had been stocked with the Down sheep your profits would not have been so great as they were in 1892, and as they will be for sometime to come, but you would have suffered less, because you would have put on the market first-class mutton lambs, and you would have received almost as much for your fleeces as you have been receiving since that time. I do not expect the Ohio sheep grower to agree with me in these propositions, but I owe it to you to say what I think along these lines, and it is your privilege, of course, to reach other conclusions.

The number of swine in Ohio in 1897, is not much different from the number in 1888. Their value in 1888, was $15,261,021, and their value in 1897, was $11,273,436. Pork is the cheapest meat we handle now-a-days. I cannot give a very satisfactory reason why this is true. Many will come to the conclusion that the idleness of the American people has more to do with it than anything else. If this is the reason, we must look for higher prices when the American workman have American jobs and furnish American markets with the products of American factories, something that has not existed for some years back.

I notice quite a change in the production of corn in Ohio. In 1887, you grew 73,797,000 bushels, valued at $35,422,560. In 1896, you grew 123,691,957 bushels, valued at $25,975,311. There is something quite suggestive here. You grew far more corn worth far less money. The American farmer produces too much raw material with which the foreigner makes high priced products. We send abroad cheap grains to enable the foreigner to make butter that competes with ours in the world's markets. The people of Ohio should not sell a bushel of corn to any other people under the Sun. We meet the Danish people in the British market with our dairy products. We furnish them with the cheapest cow feed in the world to enable them to compete with us. It would be much more sensible if the American farmer would turn his raw material into high priced products.

Your wheat crop in 1887, was 35,895,000 bushels, valued at $26,921,250. In 1896, it was 21,800,016 bushels, valued at $17,004,012. There is reason why the people of Ohio should have grown less wheat, because for a number of years back the opening up of new lands in the west, and in other nations, has caused wheat to be produced in such abundance that the prices have not been very remunerative. I find that in 1887, you had 2,740,087 acres in wheat, while in 1896, you had 2,422,224 acres growing it. The decrease in yield has been much greater than the decrease in acreage, and that suggests something well worth considering. Ohio lands are not producing as well as they did ten years ago. There is absolute necessity for establishing factories on every farm in order to maintain the fertility of the soil. The farm factory will consume all of the grain, hay, grass, fodders, etc., grown on the place. The fertility of the soil will be maintained while the factory is in operation. The European markets for meats, dairy products, poultry, etc., if we consider the conditions of the two localities, belong to us. If we will use the skill and enterprise common to those people, who buy our cheap grains to make meats, poultry, and dairy products from them, we will control the situation. The wheat crop this year will bring good prices because they have poor crops in the Argentine Federation that has been supplying the South American countries with flour. California is now supplying these localities. The wheat crop of Australia and India is short. For these reasons we will get better prices, and because more people will be employed and they will have greater purchasing power. They will consume more wheat, and this will still further increase its price. The prospects for good prices are better now than for some years.

Let us look briefly at the oats crop of Ohio. You grow about 1,000,000 acres of it, and for ten years the area has not changed much. The yield has been about 30,000,000 bushels, and its value has decreased from $9,631,360 in 1887, to $5,534,127 in 1896. The point I wish to make today with regard to the oats crop is that, if properly handled, it is one of the most valuable forage crops on the farm. It should be cut so as to save the fodder in a green state, similar to the saving of corn fodder. You will perhaps not get as much oats, but you will get a fodder that is quite valuable. This should take the place of timothy hay, a crop that I have not yet been able to see any good reason for growing on dry rolling lands. Where you have low moist land that is too wet for corn, timothy may be profitably grown, but it is not a valuable crop when you consider the room it occupies. It is popular with city people who buy hay, but the economic farmer will find that there is very little difference between a ton of timothy hay and a ton of well cured corn fodder, and very little difference between a ton of timothy hay and a ton of oat straw cut at the right time. We must study all of these economies. We must abandon crops that are not absolutely profitable, and utilize everything that can be saved in a more valuable condition. The oats crop probably should have more consideration than has yet been given to it. It does not lack much of being a perfect ration for man or beast. In the winter time sheaf oats cut in a green state in the field and fed with corn meal makes quite an acceptable ration for any of the farm animals. the horse or the ruminant. The farmer is not likely to grow too much oats where the horse, the dairy cow and the young animals are considered. We do often grow more corn than can be economically fed.

The hay crop of Ohio in 1887, was 3,880,076 tons, valued at $31,659,831. In 1896, it was 2,204,308 tons, valued at $17,480,162. I suppose this crop was mostly timothy. You will perhaps be surprised to hear me speak disparagingly of timothy hay. I have called your attention to its comparative value with the other fodders on the farm. It is an exhaustive crop, as grain crops are. I would suggest the substitution of clover by all means. Clover has a ratio, when cut in good season, quite similar to the most approved ratios recommended by our careful investigators at the experiment stations. It has one more valuable feature; it nourishes the soil with the one element, nitrogen, that must be brought from the atmosphere. In proposing the substitution of clover for timothy, permit me to call your attention to the fact, that the farm lands of Ohio have been under cultivation for a long time. They are never improved by growing timothy for making hay to be sold in the market; but I have tried to intimate that timothy is not a valuable feed stuff for the farm. It is necessary to maintain the fertility of the soil and keep it well filled with organic matter, that something will grow in the soil. Timothy roots are more valuable than no roots at all, but they are not as valuable as clover roots. An examination of worn out, depleted soils will show that they lack in organic matter, while they may have the mineral elements of plant food in abundance. The leguminous plants are the one instrumentality, with which we are familiar, that will bring the nitrogen from the atmosphere and fix it in the soil. A system of agriculture that has two-thirds of the farm area in pasture, and this pasture of growing clover, and the clover pastured with the dairy cow and early maturing cattle and sheep, will bring the soil back to its early fertility.

Friday, September 3, was designated "President's Day," in honor of President William McKinley, whom the board had the very distinguished honor of entertaining as a guest.

The preparations for receiving and entertaining the President were modest, yet fitting to the occassion of a visit from the Chief Executive of the Nation.

In receiving the President and escorting him to the grounds, the board was assisted by Col. J. S. Poland and a battalion of the Seventeenth U. S. Infantry and the Seventeenth U. S. Regiment band, Col. A. B. Coit, with two battalions of the Fourteenth Regiment Ohio National Guard and one company of the First Artillery Ohio National Guard, also company B., Ninth Battalion, O. N. G., and the following reception committee in carriages:

W. W. Miller, Secretary State Board of Agriculture, Chairman.
H. A. Axline, Adjutant General of Ohio.
Samuel L. Black, Mayor of Columbus.
Gilbert H. Stewart, President Columbus Board of Trade.
Frank Rathmell, President Columbus Board of Education.
Dr. W. T. Rowles, Representing Columbus City Council.
Henry T. Chitteden, Columbus.
George W. Sinks, Columbus.
Jerry P. Bliss, Columbus.
S. G. McClure, Columbus.
L. B. Wing, Newark.
S. H. Ellis, Springboro.
Calvin Caswell, Castalia.

The Presidential party, consisting of President and Mrs. McKinley; General R. A. Alger, Secretary of War; Hon. Jas. Wilson, Secretary of Agriculture, and daughter; Senator M. A. Hanna; Gen. Russell Hastings and wife, and Col. Myron T. Herrick and wife, was met at the Union station by the reception committee, and, with the military escort, aided by platoons of police, under the immediate supervision of Director of Public Safety, William H. Williams, and conducted to the Great Southern Hotel, where lunch was served, after which the President and his party were escorted to the state fair grounds. On arrival at the grounds the presidential salute of twenty-one guns was fired and an ovation given the President, that was spontaneous and earnest by the thousands of people who had gathered to welcome him to Ohio and to the grounds upon which was being held the greatest agricultural and mechanical exhibition in the history of the state. The party was first conducted to the Grant Memorial building, where all alighted to enter and inspect the cottage inclosed therein, and in which was born the illustrious Grant. It was especially fitting and according to the wishes of the President, that he first visit this building, as its erection was a matter of pride with him, he having recommended the building of the structure during his first term as governor of Ohio.

From the Grant Memorial building, the party was conducted to the Administration building and here the President met personally the members and officers of the Ohio State Board of Agriculture and others, in an informal manner. After a brief stay here the party again entered the carriages that were in waiting and were conducted to the main exposition building and to the east balcony, which had been beautifully decorated with plants and bunting, under the direction of Dr. W. H. Richardson and Prof. W. R. Lazenby, the committee on decorations; chairs and tables had been provided for the press, and, when President McKinley stepped to the front of the balcony and was introduced by W. W. Miller, Secretary of the Board of Agriculture, he looked down into the faces of some thirty thousand school children, who had been massed immediately in front, to sing the national airs, under the master directorship of Prof. W. H. Lott. Thousands of people, representing all classes and all sections of the state, filled the grounds in front of the building, not reserved for and occupied by the children.

The President spoke as follows:

My fellow citizens: I feel that it is almost a hopeless task to undertake to make myself heard by this great assemblage of my fellow citizens. It is peculiarly gratifying to me, after more than eighteen months of absence from the Capital City of my state, to return to these beautiful agricultural grounds to meet my old friends and my fellow citizens with whom, for so many years, I have been associated in the past. If I had been asked to select a greeting most agreeable to myself, it would be that greeting which the committee has prepared of the children of the schools of the state assembled on these grounds today. (Applause.)

The presence of thirty thousand school children commands our affection and inspires our hope; and I congratulate the children of Ohio that they enjoy exceptional opportunities for education at the hands of the government of the state. No other state has higher common school advantages than the state of Ohio. And it is gratifying to remember that a half million children in our state, every day crowd the door steps of our public schools in search of knowledge to fit them for the grave and responsible duties of life. There is one thing of which the United States can proudly boast, and that is our great public school system, where the boys and girls from every walk of life assemble in full equality and enjoy equally with all their fellows all of the advantages of public instruction. I congratulate you all for that.

I am glad to meet these school children here to day. Children's day it is to you now, but in a little while it will be Citizen's day with all of you. Upon you in a little while will rest the duty as well as the responsibility of carrying on the great political fabric established by your fathers and bearing the glorious old banner they have so proudly borne in the past. (Great applause.)

God bless the school children of Ohio. God bless the school children of America, and guide them to intelligence and virtue and morality and patriotism, and with these elements dominating our citizenship, our institutions are safe and our Republic may be glorious forever. I thank you and bid you all good afternoon. (Great applause.)

After the exercises at the main building, the President and party were conducted about the grounds and to the several departments, after which the troops of the National Guard were reviewed, when the party was again conducted to the city and to the Great Southern Hotel, where in the evening a dinner was served for the President and party, the members of the Ohio State Board of Agriculture, members of the committees and a few invited guests.

The President remained the guest of the Board until Saturday, September 4, when after a call in person at the Department of Agriculture to pay his respects to the secretaries, the party left Columbus on its way to Washington.

The following pages of this bulletin contain the entries and awards in the departments of live stock, a report of the milk test, awards in departments other than live stock, exhibits in the machinery, manufacturers and merchants departments, together with a summary of the races, names of judges, etc.

ENTRIES AND AWARDS

IN

LIVE STOCK DEPARTMENTS.

HORSES—A. J. CLARK, Member in Charge.

THOROUGHBREDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
E. Hickey, Clay Lick, O	King	First	$20 00
J. B. Hoge, St. Clairsville, O	Irish H.		
Thos. Cheek, Wellsburg, W. Va.	Geo. W Bailey	Second	10 00
Stallion 3 years old and under 4.			
E. Hickey, Clay Lick, O	Long Fellow	First	20 00
Mare 4 years old and over.			
E Hickey, Clay Lick, O	Bonnie Maid	First	15 00
Mare 3 years old and under 4.			
Crouse Hoffman, Circleville, O	Red Lady	First	10 00
Mare 2 years old and under 3.			
Crouse Hoffman, Circleville, O	Mary Strauser	Second	5 00
N. Ackerman, Columbus, O	Fast-asleep	First	10 00
Filly 1 year old and under 2.			
Crouse Hoffman, Circleville, O	Lilly Pierce	First	10 00
Filly colt.			
Crouse Hoffman, Circleville, O			
Mare with two of her progeny under 3 years old.			
E. Hickey, Clay Lick, O	Bonnie Maid	First	15 00

ALEX. GALBRAITH—*Expert Judge.*

ROADSTERS—STANDARD BRED.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
John Sandusky, Gahanna, O	Rooster		
J. A. Hall, Columbus O	Geo T. Putney		
Thos. Durfinger	Courtney		
R. W. Purdum, Plain City, O	Vixen		
A. R. Miller, Pataskala, O			
T. Shallenberger & Co., Amanda, O	Fairfield Boy	Second	$10 00
J. W. Townsley, Gladstone, O	Royalwood	First	20 00
Stallion 1 year old and under 2.			
A. R. Miller, Pataskala, O	Albert Jones	First	10 00
Stallion colt.			
Albert Green, Johnstown, O			
Mare 4 years old and over.			
F. E. Powell, Jr., Columbus, O	Poetress	First	15 00
A. R. Miller, Pataskala, O	Brownie	Second	10 00
Mare 3 years old and under 4.			
T. Shallenberger & Co., Amanda, O	Belle Wiley	First	10 00
Filly colt.			
A. R. Miller, Pataskala, O		First	5 00
Mare with two of her progeny under 3 years old.			
A. R. Miller, Pataskala, O		First	15 00
Albert Green, Johnstown, O			

ALEX. GALBRAITH—*Expert Judge.*

ROADSTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
Daniel Hickman, Reynoldsburg, O	Truro Wilkes	First	$20 00
Stallion 3 years old and under 4.			
C. A. Valentine, Grove City, O	Patsy Wilkes	First	20 00
Stallion 2 years old and under 3.			
W. A. Doty, Columbus, O	June	First	10 00
Stallion 1 year old and under 2.			
G. W. Hiskett. Fulton, O	Gold Standard	First	10 00
Jos. Van Schoyck, Reynoldsburg, O	Colonel	Second	5 00
Stallion colt.			
J. S. Wolf, Reynoldsburg, O	Cap. Wilton	First	5 00
R. W. Purdum, Plain City, O			
same			
T. Shallenberger & Co., Amanda, O	Uncle Jim		
J. A. Bell & Son, Ashley, O		Second	3 00

ROADSTERS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare 4 years old and over.			
B. F. Parsell, Reynoldsburg, O.	Columbus Girl		
H. F. Morgan, Columbus, O.	Sallie Groves.	First	$15 00
D. M. Bell, Leonardsburg, O.	Belle Wade	Second	10 00
James T. Miller, Marble Cliff, O.	Mollie		
Mare 3 years old and under 4			
F. E. Powell, Jr., Columbus, O.	Sissy Darknight	Second	5 00
B. F. Parsell, Reynoldsburg, O.	Ruby		
Same	Minnie		
J. A. Bell & Son, Ashley, O.			
Clem Beachey, Lebanon, O.		First	10 00
Mare 2 years old and under 3.			
L. M. Siebold, Alton, O.	Bessie	Second	5 00
R. W. Purdum, Plain City, O.	Virey	First	10 00
Filly 1 year old and under 2.			
Joe Fleming, Stantontown, O.	Lady Wilkes	First	10 00
T. Shallenberger & Co., Amanda, O.	Topsy	Second	5 00
Filly colt.			
Joe Fleming, Stantontown, O.	Nancy J		
B. F. Parsell, Reynoldsburg, O.	Mollie		
G. W. Hiskett, Fulton, O.	Protection		
D. M. Bell, Leonardsburg, O.		Second.	3 00
R. W. Purdum, Plain City, O.			
Same			
A. R. Miller, Pataskala, O.			
J. A. Bell & Son, Ashley, O.		First	5 00
Jas. T. Miller, Marble Cliff, O.	Beauty		
Mare with two of her progeny under 3 years of age.			
Joe Fleming, Stantontown, O.	Belle Patchen	First	15 00
Parsell and Van Schoyck, Reynoldsburg, O.	Belle		
B. F. Parsell, Reynoldsburg, O.	Susie K.		
J. S. Wolf, Reynoldsburg O.	Dollie		
G. W. Hiskett, Fulton, O.			
R. W. Purdum, Plain City, O.	Dollie	Second.	10 00
A. R. Miller, Pataskala, O.			
T. Shallenberger & Co., Amanda, O.			
J. A. Bell & Son, Ashley, O.			

ALEX. GALBRAITH—*Expert Judge.*

MORGAN HORSES.

Owner's Name and Post-office.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
McLaughlin Bros., Columbus, O.	Kansas Morgan	First	$20 00
Same	Bennett	Second	10 00
J. C. Barr, Amanda, O.			
Mare 4 years old and over.			
J. C. Barr, Amanda, O.		First	15 00

ALEX. GALBRAITH—*Expert Judge.*

FRENCH AND GERMAN COACH.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
Jacob Horning, New Bavaria, O	Kasba		
McLaughlin Bros., Columbus, O	Mathew Laensberg	Second	$10 00
Same	Lazuli		
Same			
Bell Bros., Wooster O	Wegwiser	First	20 00
Same	Adalbert		
Stallion 3 years old and under 4.			
McLaughlin Bros , Columbus, O	Carnot	First	20 00
Same	Philidor	Second	10 00

ALEX. GALBRAITH—*Expert Judge.*

CLEVELAND BAYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
McLaughlin Bros., Columbus, O	Sir George	First	$20 00
Stallion 2 years old and under 3.			
McLaughlin Bros., Columbus, O	Beauty's Son	First	10 00

ALEX. GALBRAITH—*Expert Judge.*

GRADE COACH.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or mare 4 years old and over.			
McLaughlin Bros., Columbus. O		First	$10 00
G. W. Hiskett, Fulton, O	Prince Imperial	Second	5 00
R. W. Purdum, Plain City, O	Black V		
Wm. Brimbee, Bennington, O	Mike		
Same			
F. C. Brown, Bennington, O	Joe		
A. R. Miller, Pataskala, O	George		
Gelding or mare 3 years old and under 4.			
G. W. Hiskett, Fulton, O	Highflyer	First	10 00
B. F. Parsell, Reynoldsburg, O	Belle		
Same	Beauty		
J. M. Pipes, Fulton, O	Rex	Second	5 00
Gelding or mare 2 years old and under 3.			
J. M. Pipes, Fulton, O	York		
G. W. Hiskett, Fulton, O	Cut-a-dash		
R. W Purdum, Plain City, O	Verl		
Same	Virey		
A R. Miller, Pataskala O		Second	5 00
T Shallenberger & Co., Amanda, O	Bryan		
F C. Brown, Bennington, O			
J. A. Bell & Son, Ashley, O		First	10 00

GRADE COACH—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or mare 1 year old and and under 2.			
Geo A. Geyer, Alton, O	Dock	Second	$5 00
T. Shallenberger & Co, Amanda, O	Miss Ivy	First	10 00

ALEX GALBRAITH—*Expert Judge*

FRENCH DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
Jacob Horning, New Bavaria O	Milton		
McLaughlin Bros., Columbus, O	Plutarque		
Same	Rajah		
Bell Bros., Wooster, O	Plein D Aviner	Second	10 00
Same	Appolon		
Same	Dandy, Jr	First	20 00
T. Shallenberger & Co Amanda O	Madison		
Stallion 3 years old and under 4.			
Bell Bros., Wooster, O	King of Perch	First	20 00
Stallion 2 years old and under 3.			
Bell Bros., Wooster, O	Demond 2d	First	10 00
Stallion 1 year old and under 2.			
Bell Bros., Wooster, O	Lamie	First	10 00
Mare 4 years old and over.			
A. J. Torbert, Plain City, O	Fillet		
Same	Daisy	Second	10 00
Same	Margaret	First	15 00
C. M. Jones, Plain City, O	Feliece		
Mare 2 years old and under 3.			
E. P. Roloson, West Berlin, O	Flora		
A. J. Torbert, Plain City, O	Gertrude	First	10 00
C. M. Jones, Plain City, O	Phoebe		
Same	Letitia	Second	5 00
Filly 1 year old and under 2.			
E. P. Roloson, West Berlin, O	Topsy	Second	5 00
C. M. Jones, Plain City, O	Amy		
Same	Ruth		
Same	Dido	First	10 00
Filly colt.			
A. J. Torbert, Plain City, O		First	5 00
C. M. Jones, Plain City, O		Second	3 00
Mare with two of her progeny under 3 years old.			
A. J. Torbert, Plain City, O	Daisy	First	15 00
C. M. Jones, Plain City, O	Feliece	Second	10 00

ALEX. GALBRAITH—*Expert Judge*

Clydesdales and Shires.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
McLaughlin Bros., Columbus, O	Clydeside Son	First	$20 00
John I. Gordon, Mercer, Pa	Lord Byron		
Same	Maginty		
Bell Bros., Wooster, O	Park Hero II,	Second	10 00
Chas E. Tuller, Dublin, O	Leak Arthur		
Same	Branaby III		
Stallion 3 years old and under 4.			
T. Shallenberger & Co., Amanda, O	Gilt Edge, Jr.	First	20 00
Stallion 1 year old and under 2.			
Jennie Williams, Worthington, O	Brady	First	10 00
Chas. E. Tuller, Dublin. O	William	Second	5 00
Stallion colt.			
John I. Gordon, Mercer, Pa		First	5 00
Mare 4 years old and over.			
John I. Gordon, Mercer, Pa	May Jackson	Second	10 00
Same	Louise	First	15 00
Mare 2 years old and under 3.			
Chas. E. Tuller, Dublin O	May	First	10 00
Filly 1 year old and under 2.			
John I. Gordon, Mercer. Pa	Mary Sleeth	First	10 00
Chas. E. Tuller, Dublin, O	Cecil	Second	5 00
Filly colt.			
John I. Gordon, Mercer, Pa		First	5 00
Mare with two of her progeny under 3 years old.			
John I. Gordon. Mercer, Pa	Julia	First	15 00

ALEX. GALBRAITH—*Expert Judge.*

Belgians.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 years old and over.			
McLaughlin Bros., Columbus, O	Hessian	First	$20 00
E. Courtright, Galloway, O	Pierriott	Second.	10 00
Stallion 1 year old and under 2.			
E. Courtright, Galloway, O	Jim		

ALEX. GALBRAITH—*Expert Judge.*

GRADE DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount
Gelding or mare 4 years old and over.			
W. W Ferguson. Delaware, O		Second	$5 00
Samuel Taylor, Plain City, O	Mollie		
Same	Frank		
A. J. Torbert, Plain City, O	Snip	First	10 0
John Murphy, Columbus, O	Billie		
John Fladt, Hilliard, O	Sallie		
Same	Betsy		
Gelding or mare 3 years old and under 4.			
Chas. E. Tuller, Dublin, O	Kirk	Second	5 00
John Fladt, Hilliard, O.	Daisy	First	10 00
Gelding or mare 2 years old and under 3.			
Elmer Roloson, West Berlin, O	Daisy	Second	5 00
Chas. E. Tuller, Dublin, O	Bird		
John Fladt, Hilliard, O	Nellie	First	10 00
Gelding or mare 1 year old and under 2.			
Samuel Taylor, Plain City, O		First	10 00
Same			
Elmer Roloson, West Berlin, O	Black Beauty		
John Fladt, Hilliard, O	Jennie		
Chas. Matthews, Columbus, O	Doctor	Second	5 00
Colt.			
A. J. Torbert, Plain City, O		First	5 00

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MATCHED HORSES AND FANCY DRIVERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pair matched roadsters.			
H. F. Morgan, Columbus, O		First	$20 00
A. B. Booco, Jeffersonville, O		Second	10 00
Pair grade draft matched geldings or mares.			
W. W. Ferguson, Delaware, O		First	15 00
A. J. Torbert			
John Fladt, Hilliard, O		Second	10 00
Pair grade coach geldings or mares.			
H. F. Morgan, Columbus, O		First	15 00
Gentleman's fancy driving team.			
H. F. Morgan, Columbus, O	Queen and Prince	First	20 00
T. Shallenberger & Co., Amanda, O	Bryan and Harry	Second	10 00
Gentleman's fancy single driver.			
Johnson Price, Harrisburg, O	Denver		
Chas. E. Tuller, Dublin, O	Tony	Second	5 00
D. M. Bell, Leonardsville O			
R. W. Purdum, Plain City, O	Veto		
T. Shallenberger & Co., Amanda, O	Fairfield Boy		
F. C. Brown, Bennington, O		First	10 00
Single horse driven by a lady.			
F. C. Brown, Bennington, O	Joe Wilkes	First	5 00

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Saddle Horses.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Cantering horse ridden by a lady.			
Haseltine Bros., Youngstown, O.	Fern Leaf	First	Medal
Cantering horse ridden by a gentleman.			
J. A. Wallace, Columbus, O.		First	Medal
Racking horse one-half mile trial.			
E. L. McCollem, Columbus, O	Frank	First	Medal
Same	Fannie P.		
High school horse.			
E. L. McCollem, Columbus, O	Fannie P.		
Same	China Silk	Second	$5 00
Geo. K. Nash, Columbus, O	Denmore	First	10 00
Stallion for saddle.			
E. L. McCollem, Columbus, O.	Frank	First	10 00
Mare for saddle.			
E. L. McCollem, Columbus, O	Fannie P.	First	10 00
Same	Hester	Second	5 00
R. M. Haselton & Bro., Youngstown, O			
Gelding for saddle.			
E. L. McCollem, Columbus, O	China Silk		
James Kincaid, Columbus, O.	Great Emerald	First	10 00
J. A. Wallace, Columbus, O.	Bruce		
Same	Patt		
Geo. K. Nash, Columbus, O	Denmore	Second	5 00
Jas. T. Miller, Marble Cliff, O.	Rockabye		
Horse, mare or gelding showing combined harness and saddle gaits.			
E. L. McCollem, Columbus, O	Frank	First	10 00
Same	China Silk	Second	5 00
James Kincaid, Columbus, O.	Great Emerald		

ALEX. GALBRAITH—*Expert Judge.*

Ponies and Pony Turnouts.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 3 years old and over.			
Harry R. Miller, Croton, O.	Dandy		
Same	Harry		
L. Ferguson, Newark, O	Dandy	First	$15 00
Cobb Gavitt, Ashley, O.	Ben Harrison	Second	8 00
J. M. Doren, Columbus, O.	Pepper		
Same	Stelletta		
Jno. Defues, Piqua, O	Colonel		
J. E. Robins, Greensburg, Ind	Dixie		
Geo. Arnett, Springfield, O.	Genl. Grant, Jr		
Stallion 2 years old and under 3.			
Cobb Gavitt, Ashley, O.	Dick		
Same	Dock	First	10 00
J. M. Doren, Columbus, O.	Mac Beth		
Same	Flatwood	Second	5 00

PONIES AND PONY TURNOUTS—Concluded.

Owner's Name and Postoffice	Name of Animal.	Premium.	Amount.
Stallion 1 year old and under 2.			
Henry R. Miller, Croton, O	Grove		
Cobb Gavitt, Ashley, O	Tom		
Same	Jerry		
J. M. Doren, Columbus, O	McKendree	Second	$3 00
Same	Wee Laddie		
Jno. Defrees, Piqua, O	Friday	First	5 00
George Arnett, Springfield, O	Dandy		
Stallion under 1 year old.			
J. M. Doren, Columbus, O	Kenelin	Second	2 00
Same	Lockinvar		
George Arnett, Springfield, O	Tony	First	3 00
Herd of seven head.			
Harry R. Miller, Croton, O			
Cobb Gavitt, Ashley, O		Second	8 00
Same			
J. M. Doren, Columbus, O			
Same			
John Defrees, Piqua, O			
George Arnet, Springfield, O		First	15 00
Mare 3 years old and over.			
Harry R. Miller, Croton, O	Trixie		
Same	Princess		
Cobb Gavitt, Ashley, O	Lady		
Same	Topsy		
J. M. Doren, Columbus, O	Kate		
Same	Lucy		
Same	Baby		
Same	Marygold		
John Defrees, Piqua, O	Mollie		
Same	Dorthy	Second	5 00
George Arnett, Springfield, O	Pride	First	10 00
Mare 2 years old and under 3.			
Harry R. Miller, Croton, O	Beauty		
Cobb Gavitt, Ashley, O	Bang		
Same	Daisy	First	10 00
J. M. Doren, Columbus, O	Sousie		
Same	Maid Marion		
Jno Defrees, Piqua, O	Trilby	Second	5 00
George Arnett, Springfield, O	Nellie		
Filly 1 year old and under 2.			
Harry R. Miller, Croton, O	Mac	First	5 00
Cobb Gavitt, Ashley, O	Belle	Second	3 00
J. M. Doren, Columbus, O	Delia		
Same	Naomia		
Geo. Arnett, Springfield, O	Pearl		
Filly under 1 year old.			
Harry R. Miller, Croton, O	Dell	Second	2 00
Same	Ceil		
Cobb Gavitt, Ashley, O			
J. M. Doren, Columbus, O	Jill		
Same	Blenda		
John Defrees, Piqua, O	Nancy Hanks	First	3 00
Same	Minnie		

Single Pony Turnout.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Driven by a boy or girl under 13 years of age.			
Harry R. Miller, Croton, O			
L. Ferguson, Newark, O		First	$10 00
Cobb Gavitt, Ashley, O			
R. D. Bohannan, Columbus, O			
J. M. Doren, Columbus, O		Second	5 00
Same			
Jas. T Miller, Marble Cliff, O			
Jno. Defrees, Piqua, O			

Double Pony Team Turnout.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Driven by a boy or girl under 13 years of age.			
Harry R. Miller, Croton, O			
L. Ferguson, Newark, O		First	$15 00
Cobb Gavitt, Ashley, O		Second	8 00
J. M. Doren, Columbus, O			
Same			
John Defrees, Piqua, O			

ALEX. GALBRAITH—*Expert Judge.*

Sweepstakes—Coach Horses.

Owners's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion, any age or class.			
Jacob Horning, New Bavaria, O	Kasba		
McLaughlin Bros., Columbus, O			
Same			
Same			
Bell Bros., Wooster, O	Wegwieser	First	$15 00

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Sweepstakes—French and Belgian Draft.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion, any age.			
Jacob Horning, New Bavaria, O	Milton		
McLaughlin Bros., Columbus, O			
Same			
Bell Bros., Wooster, O	Dandy, Jr	First	$15 00
Same	Plein Dairner		

SWEEPSTAKES, FRENCH AND BELGIAN DRAFT—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare any age.			
A. J. Torbert, Plain City, Ohio	Fillet		
Same	Margret	First	$15 00
C. M. Jones, Plain City, Ohio	Feliece		

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SWEEPSTAKES FOR SHIRES AND CLYDESDALES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion with four of his colts.			
Chas. E. Tuller, Dublin, Ohio	Leak Arthur	First	$25 00
Stallion any age.			
McLaughlin Bros., Columbus, Ohio	Clydeside	First	15 00
John I. Gordon, Mercer, Pa			
Bell Bros., Wooster, Ohio	Park Hero III		
T. Shallenberger & Co., Amanda, Ohio			
Mare any age.			
John I. Gordon, Mercer, Pa		First	15 00

ALEX. GALBRAITH—*Expert Judge.*

SWEEPSTAKES—ROADSTERS STANDARD BRED.

Owner's Name and Postoffi	Name of Animal.	Premium.	Amount.
Stallion with four of his colts.			
R. W. Purdum, Plain City, Ohio	Vixen	First	$25 00
T. Shallenberger & Co., Amanda, Ohio			
Stallion any age.			
J. A. Hall, Columbus, Ohio	Esparta Rex		
Thos. Durfinger, Columbus, Ohio	Courtney		
R. W. Purdum, Plain City, Ohio	Vixen		
J. W. Townsley, Gladstone, Ohio	Royalwood	First	15 00

ALEX. GALBRAITH—*Expert Judge.*

SWEEPSTAKES FOR ROADSTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount,
Stallion with four of his colts.			
B. F. Parsell, Reynoldsburg, Ohio	Columbus	First	$25 00
Stallion any age.			
Daniel Hickman, Reynoldsburg, Ohio	Truro Wilkes	First	15 00
W. A. Doty. Columbus, Ohio	June		
C. A. Valentine, Grove City, Ohio	Patsy Wilkes		

ALEX. GALBRAITH, *Expert Judge.*

SUMMARY OF THE RACES.

THREE-YEAR OLD PACE—HORSES ELIGIBLE TO A 2:30 CLASS.

Entered by	Name of Animal.	Heats.		
L. B. Murphy, Columbus, Ohio	Col. Dick Thompson, br. g.	7	4	4
Tom Settle, Versailles, Ky.	Will Leyburn, blk. c	1	1	1
Curry & Holden, Marietta O.	Walter B., s. g	3	3	2
J. F. Flanigan, Newark, O	Maggie Patchen, s. f	6	Dis.	
Alfred Dan, Sabina, O	G. W. D., blk. s	2	2	3
C. W. Phellis, Mechanicsburg, O.	Gypsey, Red, ch. m.	4	6	Dr.
Wm. Trimble, Montgomery, Ala.	Joe Thayer, blk. g.	5	5	5
Valentine & Kellar, Grove City, O.	Nightmare, blk. m	Dis.		

Time—2:24½, 2:20½, 2:20½.

2:21 CLASS TROTTING.

Entered by	Name of Animal.	Heats.			
Ed. Snyder, Delaware, O	Exparta Rex, b. s.	6	8	7	8
Jno. Splan, Glenville, O	King Red, b. s	2	5	6	5
R. P. Liter, Point Pleasant W. Va	Spring Boy, g. s	7	7	3	4
Wm. R. Bowen, Adrian Mich	Peter Swift, b. g	5	4	9	7
J. G. Herndon, Homa, La.	Corporal Cook, b. g.	4	9	4	9
W. W. Richardson, Akron, O.	Tempest, s. m	8	1	1	1
J. W. Townsley, Jamestown, O.	Royalwood, blk. s	1	3	5	3
Foster Webb, Hamilton, O	Pantheon B. br. s	11	10	11	10
Jno. Chufer, Cleveland, O.	Buckeye, ch. s.	9	2	2	2
J. L. & J. W. Rothrock, Washington C. H., O	Ethel Burns	10	11	10	6
Willis Laird, Mansfield, O	Tom Thorne, ch. s.	3	6	8	Dr.

Time—2:21¼, 2:18¼, 2:19½, 2:18¼.

2:19 CLASS PACING.

Entered by	Name of Animal.	Heats.		
D. Raybould, Dayton, O	Hal Rowe, ch. g.	3	7	6
E. Birum, Dayton, O.	Red Streak, b. g	9	6	9
M. O. Stokes, Urbana, O.	Belle K., b. m.	5	2	3
J. G. Herndon, Homa, La.	Britton, b. s.	7	5	5
W. T. Majers, Brink Haven, O.	Lady Pipes, s m	1	1	1
P. J. Curren, Sabina O.	Clashmore, b. m.	4	4	7
J. W. Stillwell, Troy, O.	J. W S., b. s	8	9	8
F. R. Shank, Litchfield, O.	Birdy Deckerson	2	8	2
J. A. Hall, Columbus, O	Bowery Girl, b. m	6	3	4

Time—2:15½, 2:15½, 2:15½.

2:32 CLASS TROTTING.

Entered by	Name of Animal.	Heats.				
John Splan, Glenville, O	Barometer, br. g.	6	2	3	Dis.	
M. O. Stokes, Urbana, O.	Stockton, b s.	1	5	4	1	1
C. R. Evans, Columbus O	Veda Wilkes, g. m.	Dr.				
Bucyrus Trotting Stable, Bucyrus, O.	Percy, b. g	5	6	7	7	5
E. L. Hills, Jefferson, O.	Lazelle, H., ch. g.	3	3	1	5	4
W. McCurdy, Grove City, O.	Grace Sumner	4	7	8	Dr.	
C. W. Upson, Mansfield, O.	Baron Boy	8	8	6	4	Dr.
Wm. Trimble, Montgomery, Ala.	Arch W., ch. s	2	1	2	2	2
B. Huff, Chicago, Ills.	Delpha, blk. m	7	4	5	3	3

Time—2:21¼, 2:27¼, 2:24¼, 2:21¼, 2:24¼.

2:26 CLASS TROTTING.

Entered by	Name of Animal.	Heats.			
Thos Clayton, Gallipolis, O	Belle C	6	7	8	7
Woodward Bros., Perintown, O	Toe Calk, s. g	Dr.			
Lyman Janney, Carthage, O	Maynard, Jr., g. g	1	2	4	4
Bowen & Hack, Adrain, Mich	Quick step b. m	3	4	2	3
L. D. Converse, Urbana, O	Musto. blk. g	2	1	1	1
E. L. Zieber, Columbiana	Atlantic. Jr. blk. g	4	8	3	2
Handley & Gunder, Richwood, O	Zip. b. m	5	5	6	6
P. Lally, Carnegia, Pa	Petroleum	8	6	7	8
Geo. Tod, Youngstown, O	Princess. b. m	7	3	5	5

Time, 2:22½, 2:20½, 2:21½, 2:21¾.

2:29 CLASS PACING.

Entered by	Name of Animal.	Heats.		
M. A. Nipgen, Dayton, O	Elma, b. m	4	7	7
Alfred Deen, Sabina, O	G. W. D. blk. s	11	11	11
Geo. E. McKaig, Troy, O	Clipcetta, blk. m	1	1	1
L. D. Converse, Urbana, O	Hal Patchen, br. s	2	10	2
D. Raybould. Dayton. O	Master Gilbert, b. g	5	3	5
A C. Sifrit, London, O	Bessie P., g. m	3	6	6
N. Patrick, Sunbury. O	Headlight, b. m	6	4	10
H. B. White, Grove City. O	Budd White br. s	8	2	8
Curry & Holden, Marietta, O	Walter B., s. s	7	8	9
J. H. Kirpatrick, Attica, O	Dr. Fox, b. g	9	12	12
R. R. Liter, Point Pleasant. W. Va	Etta V., blk. m	12	9	3
E. L. Zieber, Columbiana, O	Jessie L., b. m	10	5	4

Time, 2:21¼, 2:22¼, 2:21¼.

2:17 CLASS TROTTING.

Entered by	Name of Animal.	Heats.		
Geo. W. Jamison. Delaware. O	Black Raven, blk. g	2	2	2
T. W. Price Steubenville, N	Avana, b. m	3	3	6
Jno. Splan, Glenville, O	Alkoran, b. g	6	6	8
Geo. F Weeks, Rushville, Ind	Woodford C., b. g.	8	7	7
W. Weber, Five Mile, O	Jolly Bird, r. m	4	4	5
G. W. Gardner, Paris, Ky	Dorris Wilkes, blk. m	7	5	4
Harry Leoy, Chillicothe, O	Philbert, g. g	5	8	3
Wm. Taylor. Toledo, O	Hans, McGregor, s. g	1	1	1
Tom Settle, Versailles, Ky	Annie Lawson, r. m	9	9	9

Time, 2:16¾, 2.16½ 2:15¾.

2:40 CLASS TROTTING.

Entered by	Name of Animal.	Heats.		
Geo. McCrea, New Holland, O	Nellie Conway, g. m	3	7	8
M J. Kearns. Springfield. O	Bessie K., b. m	1	1	1
Curry & Holden, Marrietta, O	Dorothy Brown, r. m	9	9	5
Clem Beachey, Lebanon, O	Miss Browning, br. m	2	4	4
Fred Lightfoot. Rushville, Ind	Fred L., b. g	10	3	Dis
Willis Laird, Mansfield, O	Thornwitch, b. f	7	6	7
C. R. Evans, Columbus, O	Mozette, b. m	5	2	2
B. Huff, Chicago, Ills	Delpha bk. m	6	5	6
Walter B. Mitchell. Bay City. Mich	Antea, b. s	4	8	3
Huston Thomas, Plumwood, O	Minola, b. m	8	Dis	

Time, 2:25¼, 2:22¼, 2:23.

HURDLE RACE—MILE DASH.

Entered by.	Name of Animal.	Heats.
Jno. W. Thomas, New York. N. Y.	Target b. g	1
Ackerman & Co., "	Lord Russell ch. g.	2
N. Ackerman, "	Dan b. g	3

Time—2:00.

RUNNING—ONE MILE DASH.

Entered by.	Name of Animal.	Heats.
Jno. W. Thomas, New York. N. Y.	Stretch Runner ch. c.	2
Chas. Brown, W. Jefferson, O.	Whitesides. g.	1
Jno. Conner. Ottawa. Ills.	Richmond b. g.	5
Paul Jamison, New Castle. Ind.	Lady Hunt. b. m.	3
W. C. Morris, Union City. Tenn.	Prince of Doffness b. s,	7
E. W. Fitzgerald, Cameron. W. Va.	Lottie Hunter br. f.	
H. J. Woodford, E. Randolph, N. Y.	Bayard ch. g.	

Time—1:47¾.

RUNNING—HALF-MILE DASH.

Entered by.	Name of Animal.	Heats.	
C E. Hudson, Cleveland, O	Mary Lue b, m.,	5	5
W. C. Morris, Union City, Tenn	Charlie Wells bek. g.	1	1
E. W. Fitzgerald, Cameron W. Va	Elsie 2d b m.	6	6
H. S. Ford, Mainville. O.	Miss Elkwood s. m.	4	4
Paul Jamison New Castle, Ind.	Lady Hunt b. m.	2	2
S. M. Creighton, Blanchester, O.	Capt. Draul br. g.	3	3

Time—0:51, 0:51.

RUNNING—DASH OF ONE MILE AND A FURLONG.

Entered by.	Name of Animal.	Heats.
R. Fronfield, Van Wert O	Karlmerz b. s.	5
Chas. Slagel, W. Jefferson, O	Whiteside ch. g.	3
C. C. Campbell, Marion O	Darius b. g.	2
Jno. W. Thomas, New York, N Y.	Stretch Runner ch. c.	1
W G. Mathews. Homer, O	Cappa br. s.	4

Time—2:02.

PONY RACE.

Entered by.	Name of Animal.	Heats.		
Frank Ross Columbus. O.	Bessie B br. m.	5	4	
Jno. Feeney. Walnut Run, O.	Canadian Boy b. g.	1	2	2
L. M. Siebold, Alton, O	Harry C. b. g	4	3	
Neil Reynolds, Columbus, O,	Topsey T. b. m.	3	5	
Geo. Dell, Columbus, O.	Blue Blanket b. g.	2	1	1

Time—1:02, 0:56, 1 07.

RUNNING—DASH OF SEVEN FURLONGS.

Entered by	me of Animal.	Heats.
H. J. Woodford, E. Randolph, N. Y.	Bayard, ch. g	3
C. C. Campbell, Marion, O.	Darius b. g	2
F. Foy, St. Louis, Mo.	Marble Rock, br. g	5
O. L. Hill, Maineville, O.	Miss Summers s m.	4
E. W Fitzgerald, Cameron, W. Va.	Lottie Hunter, br. m.	1

Time—1:35

HURDLE RACE—ONE MILE DASH.

Entered by	Name of Animal	Heats.
John W. Thomas, New York, N. Y.	Target, b g	3
W. G. Deakin, St. Louis, Mo	Marble Rock, br. g	1
M. Wright, Fosters, O	Lengthy Frank, b. g.	2
M. Ackerman, Columbus, O.	Dan, b. g.	4

Time—1:54½

RUNNING—HALF MILE HEATS.

Entered by	Name of Animal.	Heats.	
Jno. Abrams, Ashland, O.	Jersey Hunt, s s.	1	1
S. M Creighton, Blanchester, O.	Capt. Drane, br. g.	3	2
Thos. Cheek, Wheeling, W. Va.	Irish H, b. s.	2	

Time—51-52

CATTLE—L. G. ELY, Member in Charge.

SHORTHORNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
J. G. Robbins & Sons. Horace, Ind	St. Valentine	First	$20 00
J. A. Gerlaugh. Harshman, Ohio	Scottish King	Second	10 00
Darling Bros., Nellie, Ohio	Sharon Abboth		
Same	Golden Crown		
Bull 2 years old and under 3.			
Aaron Barber, Avon, N. Y	Sharon Marshall	First	20 00
Bull 1 year old and under 2.			
Wm Warfield, Lexington, Ky	Superior		
C. L. Gerlaugh, Osborn, Ohio	Captain White	Second	5 00
Darling Bros., Nellie, Ohio	Duke of Warsaw	First	10 00
Bull calf.			
Wm. Warfield, Lexington, Ky	Monarch		
Same	Symmetry	First	5 00
C. L. Gerlaugh Osborn, Ohio	Cuba		
Same	McKinley		
Same	Gold Standard		
Aaron Barber, Avon N. Y	Grand Marshall	Second	3 00
J. A. Gerlaugh, Harshman, Ohio	Good Hope		
Same	Cap Sheaf		
Darling Bros., Nellie, Ohio	Duke of Mohawk		
Same	Duke of Warsaw		
Cow 3 years old and over.			
Wm. Warfield, Lexington, Ky	Celansine		
Same	Dainty Lady		
J. G. Robbins & Sons, Horace, Ind	Lustre		
Same	Bracelet 7th		
C. L. Gerlaugh, Osborn, Ohio	Prima Dona	Second	10 00
Aaron Barber, Avon, N. Y	Mary Abbotsbum 7th	First	15 00
Darling Bros, Nellie, Ohio	Belle of Mohawk		
Same	Belle of Mohawk, 36		
Cow or heifer 2 years old and under 3.			
Wm Warfield, Lexington Ky	Camelia		
Same	Zillah		
J. G Robbins & Sons, Horace, Ind	Sultana	Second	5 00
Same	Monarch's Lady		
C. L. Gerlaugh Osborn Ohio	Corea		
Aaron Barber, Avon, N. Y	English Lady 13th	First	10 00
Same	Julins Pet		
J. A. Gerlaugh, Harshman, Ohio	Coraopsis		
Darling Bros., Nellie, Ohio	Belle of Mohawk, 37		
Same			
Heifer 1 year old and under 2.			
Wm. Warfield, Lexington, Ky	Dainty Maiden		
Same	Bridle Bell		
J. G. Robbins & Sons, Horace, Ind	Noras Valentine	First	10 00
C. L. Gerlaugh, Osborn, Ohio	Chalice		
Darling Bros., Nellie Ohio	Belle of Mohawk		
Aaron Barber, Avon, N Y	Lady Sharon 3d	Second	5 00
Same	Carrie*		
J A. Gerlaugh, Harshman, Ohio	Gem of Auvern		
Same	Emblem		
Heifer calf.			
Wm Warfield, Lexington Ky	Clover Blossom		
Same	Delicacy		
J. G. Robbins & Sons, Horace, Ind	Lady Valentine	First	5 00
C. L. Gerlaugh, Osborn, Ohio			
Same			
Aaron Barber, Avon, N Y	Lady Sharon 4th	Second	3 00
Same	Lady Sharon 5th		
J. A. Gerlaugh, Harshman Ohio	Evalina		
Darling Bros., Nellie, Ohio	Belle of Warsaw		
Same	"		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium	Amount.
EXHIBITOR'S HERD.			
Bull and graded herd.			
Wm. Warfield, Lexington, Ky			
J G. Robbins & Sons, Horace, Ind		First	$40 00
C. L. Gerlaugh, Osborn, Ohio			
Aaron Barber, Avon, N. Y.			
Darling Bros, Nellie, Ohio			
BREEDERS' HERD.			
Young herd.			
Wm. Warfield, Lexington, Ky			
C. L. Gerlaugh, Osborn, Ohio			
Aaron Barber, Avon, N. Y.		First	40 00
Darling Bros., Nellie, Ohio			
Four animals of either sex.			
Wm. Warfield, Lexington, Ky			
C. L. Gerlaugh, Osborn, Ohio			
Aaron Barber, Avon, N. Y.		First	30 00
J. A. Gerlaugh, Harshman, Ohio			

George Allen, Allerton, Ill.—*Expert Judge.*

DEVONS.

Owner's Name and postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
W. E. Lewis, Casstown, Ohio	Bruce	Second.	$10 00
D J. Whitmore & Co., Casstown, Ohio	Brot, W	First	20 00
Bull 2 years old and under 3.			
W E. Lewis, Casstown, Ohio	Twilight	Second.	10 00
D. J. Whitmore & Co., Casstown, Ohio	Gen. Colley	First	20 00
Bull 1 year old and under 2.			
W. E. Lewis, Casstown, Ohio		First	10 00
Bull Calf.			
W. E. Lewis Casstown, Ohio	Baby	Second.	3 00
D. J. Whitmore & Co, Casstown, Ohio	Bixler	First	5 00
Cow 3 years old and over.			
W. E. Lewis, Casstown Ohio	Florence	First	15 00
W. E. Lewis, Casstown. Ohio	Clara Lewis		
D J. Whitmore & Co., Casstown, Ohio	Lide Hebe	Second.	10 00
D J. Whitmore & Co., Casstown, Ohio	Benlah Lee		
Cow or heifer 2 years old and under 3.			
W E. Lewis, Casstown, Ohio	Hillside Beauty	Second.	5 00
D. J. Whitmore & Co, Casstown, Ohio	Thursa D	First	10 00
D. J. Whitmore & Co, Casstown, Ohio	Ruth W		
Heifer 1 year old and under 2.			
W. E. Lewis, Casstown, Ohio	Hattie W	First	10 00
D J Whitmore & Co., Casstown, Ohio		Second.	5 00
D. J. Whitmore & Co, Casstown, Ohio			
Heifer calf.			
W. E. Lewis, Casstown, Ohio		First	5 00
W. E Lewis. Casstown. Ohio			
D. J. Whitmore & Co., Casstown, Ohio		Second.	3 00
D. J. Whitmore & Co., Casstown, Ohio			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull and graded herd.			
W. E. Lewis, Casstown, Ohio			
D. J. Whitmore & Co, Casstown, Ohio		First	$40 00
BREEDERS HERD.			
Young herd.			
W. E. Lewis, Casstown, Ohio		First	40 00
D. J Whitmore & Co., Casstown, Ohio			
Four animals of either sex.			
D. J Whitmore & Co., Casstown, Ohio		First	30 00

N. W. Baker—*Expert Judge.*

HEREFORDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
Thomas Clark, Beecher, Ill	Lars		
John Hooker, New London, Ohio	Java	Second	$10 00
Harness & Graves, Bunker Hill, Ind.		First	20 00
Same			
Bull 2 years old and under 3.			
Harness & Graves, Bunker Hill, Ind		First	20 00
Bull 1 year old and under 2.			
Thos. Clark, Beecher, Ill.	Largess	Second	5 00
Harness & Graves, Bunker Hill, Ind		First	10 00
Same			
Bull calf.			
Thos. Clark, Beecher, Ill	Leroy	First	5 00
Harness & Graves, Bunker Hill, Ind		Second	3 00
Same			
Cow 3 years old and over.			
Thos. Clark, Beecher, Ill	Jessamine	First	15 00
John Hooker, New London, Ohio	Dolly 2d	Second	10 00
Harness & Graves, Bunker Hill, Ind			
Same			
Cow or heifer 2 years old and under 3.			
Thos. Clark, Beecher, Ill	Juro	First	10 00
Same	Adorable	Second	5 00
John Hooker, New London, Ohio	Perser		
Harness & Graves, Bunker Hill, Ind			
Heifer 1 year old and under 2			
Thos. Clark, Beecher, Ill	Perfect	First	10 00
Same	Elegant	Second	5 00
John Hooker, New London, Ohio	Dolly 5th		
Same	Maple Leaf		
Harness & Graves, Bunker Hill, Ind			
Same			

HEREFORDS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer calf.			
Thos. Clark, Beecher, Ill	Clover Clark	Second	$3 00
Same	Everett	First	5 00
John Hooker, New London, O.	Belle of Maplewood		
Same	Alice		
Harness & Graves, Bunker Hill, Ind.			
Same			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull and graded herd.			
Thos. Clark, Beecher, Ill		First	$40 00
John Hooker, New London, O.			
Harness & Graves, Bunker Hill, Ind			
BREEDERS' HERD.			
Young herd.			
Thos. Clark, Beecher, Ill		First	40 00
Harness & Graves, Bunker Hill, Ind			
Four animals of either sex.			
Thos. Clark, Beecher, Ill		First	30 00
John Hooker, New London O.			
Harness & Graves, Bunker Hill, Ind			

N. W. BAKER—*Expert Judge.*

JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
E. P. Black, Woodstock, O.	Alberta Fancy Harry		
J. E. Robbins, Greensburg, Ind	Idas Rioter	Second	$10 00
Same	Catono Whedin	First	20 00
Bull 2 years old and under 3.			
E. P. Black, Woodstock, O	Breeders' Prize	Second	10 00
J. E. Robbins, Greensburg, Ind	Ozar	First	20 00
Bull 1 year old and under 2.			
J. E. Robbins, Greensburg Ind	Pedro's Gray Magorrin	First	10 00
Bull calf.			
E. P. Black, Woodstock, O		First	5 00
Same		Second	3 00

JERSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount
Cow 3 years old and over.			
E. P. Black, Woodstock, O.	Flossie's Fancy		
Same	Dinah's Fancy	Second	$10 00
J. E. Robbins, Greensburg, Ind	Silversheen		
Same	Cream Vanilla		
Same	Maitland's Brownie	First	15 00
Cow or heifer 2 years old and under 3.			
E. P. Black, Woodstock, O.	Anne Deans Signal	First	10 00
Same	Fyrrell's Fancy		
J. E. Robbins, Greensburg, Ind	Catono's Nelly		
Same	Catono's La Priscille		
Same	King's Fancy N.	Second	5 00
Heifer 1 year old and under 2.			
E. P. Black, Woodstock, O.		Second	5 00
Same			
J. E Robbins, Greensburg, Ind	Dame Pansy	First	10 00
Same	Stoke Stella		
Heifer calf.			
E. P. Black, Woodstock, O.		First	5 00
Same			
J. E. Robbins, Greensburg, Ind	St Lambert La P—	Second	3 00
Same	Miropa		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull and graded herd.			
E. P. Black, Woodstock, O.			
J. E. Robbins, Greensburg, Ind		First	$40 00
BREEDERS HERD.			
Young herd.			
E. P. Black, Woodstock, O.		First	40 00
Four animals of either sex.			
E. P. Black, Woodstock, O.		First	30 00

M. A. SCOVELL, Lexington, Ky.—*Expert judge.*

GUERNSEYS.

Owner's Name and Postoffice.	Name of animal.	Premium.	Amount.
Bull 3 years old and over.			
McCormick & Edgerly, Pataskala. O	Beth Avon		
Joe Defrees, Piqua, O	Delegate	Second	$10 00
Same	Cudjo	First	20 00
Bull 1 year old and under 2			
McCormick & Edgerly, Pataskala, O	Beth Rose	First	10 00
Joe Defrees, Piqua, O	Tamany	Second	5 00
Bull calf			
McCormick & Edgerly, Pataskala. O	Jumbo	Second	3 00
Joe Defrees, Piqua, O	Jimmey Boy	First	5 00
Cow 3 years old and over.			
McCormick & Edgerly. Pataskala, O	Montiner	First	15 00
Joe Defrees. Piqua, O			
Same	Miss Vanity		
Same	Cozy	Second	10 00
Cow or heifer 2 years old and under 3.			
McCormick & Edgerly, Pataskala, O	Cordelia	Second	5 00
Joe Defrees. Piqua, O	Beauty of Round Rock	First	10 00
Same	Drasie		
Heifer 1 year old and under 2.			
McCormick & Edgerly, Pataskala, O	Mildred	Second	5 00
Joe Defrees, Piqua, O	Round Rock	First	10 00
Heifer calf.			
McCormick & Edgerly, Pataskala. O	Fern K	Second	3 00
Joe Defrees, Piqua, O	Lady Jane	First	5 00
Same	Linda		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull and graded herd.			
McCormick & Edgerly, Pataskala, O			
Joe Defrees, Piqua, O		First	$40 00
Four animals of either sex			
Joe Defrees, Piqua, O		First	30 00

M A. SCOVELL, Lexington, Ky.—*Expert Judge.*

AYRSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
J. P. Beatty, Pataskala, Ohio	Tallahassa	Second	$10 00
J. F. Converse, Woodville, N. Y.	Ossidine	First	20 00
Bull 2 years old and under 3.			
J. P. Beatty, Pataskala, Ohio	Cyclone	Second	10 00
J. F. Converse, Woodville, N. Y	Carleton O'Naga	First	20 00
Bull 1 year old and under 2.			
J. P. Beatty, Pataskala, Ohio	Watseka	First	10 00
J. F. Converse, Woodville, N. Y	Major Ossidine	Second	5 00
Bull calf.			
J. P. Beatty, Pataskala, Ohio	Chic		
Same	Muggins	First	5 00
J F Converse, Woodville, N. Y	Carl Peerless	Second	3 00
Cow 3 years old and over.			
J P. Beatty, Pataskala, Ohio	Lady Jewess 2d	Second	10 00
Same	Cleopatra		
J. F. Converse, Woodville, N Y	Gladys Drummond	First	15 00
Same	Ella Drummond		
Cow or heifer 2 years old and under 3.			
J. P. Beatty, Pataskala, Ohio	Allines Pet		
Same	Zola	Second	5 00
J. F. Converse, Woodville, N. Y	Jossie Ossidine		
Same	Rinisio Princess	First	10 00
Heifer 1 year old and under 2.			
J. P. Beatty, Pataskala, Ohio	Conelia	First	10 00
Same	Hassa 2d		
J. F. Converse, Woodville, N. Y	Clara Belle 3d	Second	5 00
Same	Mabelle		
Heifer calf.			
J P Beatty, Pataskala, Ohio	Geneva		
Same	Nina May	First	5 00
J. F. Converse, Woodville, N. Y		Second	3 00
Same			

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium	Amount
EXHIBITOR'S HERD			
Bull and graded herd.			
J P Beatty, Pataskala, Ohio			
J F Converse, Woodville, N. Y		First	$40 00
BREEDERS' HERD.			
Young herd.			
J P. Beatty, Pataskala, Ohio		First	40 00
J. F. Converse, Woodville, N Y			
Four animals of either sex.			
J P. Beatty, Pataskala, Ohio		First	30 00
J. F. Converse, Woodville, N Y			

M A. SCOVELL, Lexington, Ky.—*Expert Judge*

HOLSTEINS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over			
W B. Smith & Son, Columbus, O		Second	$10 00
Same	Vasaline's Statesman		
C. W. Horr, Wellington, O	Pay Lyons		
Paxton & Quivey, Houstonville, Pa	Violet S. King	First	20 00
Bull 2 years old and under 3.			
W. B. Smith & Son, Columbus, O	Clothilda Netherland	First	20 00
Paxton & Quivey, Houstonville, Pa	Pieterly McKean	Second	10 00
Bull 1 year old and under 2.			
W. B. Smith & Son, Columbus, O	Hilton's Maid 2d Statesman	Second	5 00
Same	Johna Fairmonts	First	10 00
Paxton & Quivey, Houstonville, Pa	Barrington Billy		
Bull calf.			
W. B. Smith & Son, Columbus, O		Second	3 00
Paxton & Quivey, Houstonville, Pa	Winsome	First	5 00
Cow 3 years old and over.			
W. B. Smith & Son, Columbus, O	Vasaline	Second	10 00
Same	Nancy Dew Drop		
Same	Nancy Dew Drop 2d		
Paxton & Quivey, Houstonville, Pa	Lillie A	First	15 00
Same	Lady Furnesse Tritomia		
Cow or heifer 2 years old and under 3.			
W. B. Smith & Son, Columbus, O	Mary Hilton	Second	5 00
Same	Miss Sharp	First	10 00
Paxton & Quivey, Houstonville, Pa	Wixom Schinling		
Same	Wixom Daisey		
Heifer 1 year old and under 2.			
W. B. Smith & Son, Columbus, O	Ginger	First	10 00
Same	Calico Margaret	Second	5 00
Paxton & Quivey, Houstonville, Pa	Mayo's Model		
Same	Shadeland Olly's Inez		
Heifer calf.			
W. B. Smith & Son, Columbus, O	Often Repeated	Second	3 00
Same	Inspiration	First	5 00
Paxton & Quivey Houstonville, Pa	Shadeland Olly's Pearl		
Same	Wixoms Keys Clothilde		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITORS' HERD.			
Bull and graded herd.			
W B. Smith & Son, Columbus, O		First	$40 00
Paxton & Quivey, Houstonville, Pa			
BREEDERS' HERD.			
Young herd.			
W B. Smith & Son, Columbus, O		First	40 00
Four animals of either sex.			
W. B. Smith & Son, Columbus, O		First	30 00

M A. SCOVELL Lexington, Ky.—*Expert Judge.*

BLACK POLLS.

Owner's Name and Postoffice.	Name of Animal,	Premium.	Amount.
Bull, 3 years old and over.			
D. Bradfute & Son, Cedarville, O	Zaire 5th	First	$20 00
Same	Gay Erie	Second	10 00
Bull, 1 year old and under 2.			
D Bradfute & Son, Cedarville, O	Fay of Meadow Brook	First	10 00
Bull calf.			
D. Bradfute & Son, Cedarville, O	Lucian	First	5 00
Cow, 3 years old and over.			
D. Bradfute & Son, Cedarville, O	Lavender	First	15 00
Same	Lillian	Second	10 00
Cow or heifer 2 years old and under 3.			
D. Bradfute & Son, Cedarville, O	Boneta	First	10 00
Same	Lady	Second	5 00
Heifer 1 year old and under 2.			
D. Bradfute & Son, Cedarville, O	Quick	First	10 00
Same	Lassie 2d	Second	5 00
Heifer calf.			
D. Bradfute & Son, Cedarville, O	Bonett	Second	3 00
Same	Fancy	First	5 00

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull and graded herd.			
D. Bradfute & Son, Cedarville, O		First	40 00
BREEDERS HERD.			
Young herd.			
D. Bradfute & Son, Cedarville, O		First	40 00
Four animals of either sex.			
D. Bradfute & Son, Cedarville, O		First	30 00

N. W. BAKER—*Expert Judge,*

RED POLLS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
Andrew Bros. & Co., Cedarville, O	Vigorous	First	$20 00
Frank Hartline, Strasburg, O	Cherokee	Second	10 00
Bull 2 years old and under 3.			
Andrew Bros. & Co., Cedarville, O	Gov. Bradley	First	20 00
Bull 1 year old and under 2			
Andrew Bros. & Co., Cedarville, O	Advance	Second	5 00
Same	Prince	First	10 00
Bull calf.			
Andrew Bros. & Co., Cedarville, O		First	5 00
Same			
Cow 3 years old and over			
Andrew Bros. & Co., Cedarville, O	Mabel	Second	10 00
Same	Beauty of Cedarville.		
Same	Mannette	First	15 00
Frank Hartline, Strasburg. O	Pretty Minnie		
Cow or heifer 2 years old and under 3.			
Andrew Bros. & Co., Cedarville, O	Vera II	First	10 00
Frank Hartline, Strasburg, O	Bulah	Second	5 00
Heifer 1 year old and under 2.			
Andrew Bros. & Co., Cedarville, O	Beauty of Cedarville II	Second	5 00
Same	Haughty III		
Frank Hartline, Strasburg. O		First	10 00
Heifer calf.			
Andrew Bros. & Co., Cedarville, O	Haughty IV	Second	3 00
Same		First	5 00
Frank Hartline, Strasburg, O			

SWEEPSTAKES.

Owner's Name and Postoffie.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull and graded herd.			
Andrew Bros. & Co., Cedarville, O		First	$40 00
Frank Hartline, Strasburg, O			
BREEDERS' HERD.			
Young herd.			
Andrew Bros. & Co., Cedarville, O		First	40 00
Four animals of either sex.			
Andrew Bros. & Co., Cedarville, O		First	30 00

N. W. BAKER—*Expert Judge.*

POLLED DURHAMS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 years old and over.			
Wm. Tassey, Watkins, O	Hamilton Boy	Second	$10 00
Beam & Bogart, Columbus Grove, O	Gay Monarch	First	20 00
Bull 1 year old and under 2.			
Wm. Tassey, Watkins, O	Rob Roy	First	10 00
Bull calf.			
Wm. Tassey, Watkins, O		First	5 00
Beam & Bogart, Columbus Grove, O	McKinley	Second	3 00
Cow 3 years old and over.			
Wm. Tassey, Watkins, O	Pansy	Second	10 00
Same	Cherry Bloom		
Beam & Bogart, Columbus Grove, O	Dora	First	15 00
Same	Red Rose, 2d		
Cow or heifer 2 years old and under 3.			
Wm. Tassey, Watkins, O	Allie	Second	5 00
Same	Gertie		
Beam & Bogart, Columbus Grove, O	Lily Langtry, 3d	First	10 00
Same	Maud Miller		
Heifer 1 year old and under 2			
Wm. Tassey, Watkins, O	Beauty	Second	5 00
Beam & Bogart, Columbus Grove, O	Plum Creek Beauty	First	10 00
Same	Hoosier Maid		
Heifer calf.			
Wm. Tassey, Watkins, O		Second	3 00
Same		First	5 00
Beam and Bogart, Columbus Grove, O	Plum Creek Nuna		
Same	Plum Creek Blossom		

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
EXHIBITOR'S HERD.			
Bull and graded herd.			
Wm. Tassey, Watkins, O			
Beam & Bogart, Columbus Grove, O		First	$40 00
BREEDERS HERD.			
Young herd.			
Wm. Tassey, Watkins, O		First	40 00
Four animals of either sex.			
Wm. Tassey, Watkins, O		First	30 00

N. W. BAKER—*Expert Judge.*

GRAND SWEEPSTAKES—DAIRY BREEDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Herd of one bull and four cows			
J. E. Robbins, Greensburg. Ind	Idas Rioter		
E. P. Black, Woodstock, O	Recorder's Prize		
W. B. Smith & Son, Columbus, O		First	S. Cup.
Bull 2 years old and over.			
W. B. Smith & Son, Columbus O			
J. E. Robbins, Greensburg, Ind	Idas Rioter	First	Medal
Same	Catono		
Bull under 2 years old.			
W. B. Smith & Son, Columbus. O			
J. E. Robbins, Greensburg, Ind	Ozar Connassia		
Same	Pedros Gray Majorrile	First	Medal.
Cow 2 years old or over.			
W. B. Smith & Son, Columbus, O		First	Medal.
J. E. Robbins, Greensburg, Ind	Silversheen		
Same	Cream Varilla		
Same	Jersey Venture		
E. P. Black, Woodstock, O	Dinah's Fancy		
Same	Flora's fancy		
Cow under 2 years old.			
W. B. Smith & Son. Columbus, O			
J. E. Robbins, Greensburg, Ind	Dame Pansy	First	Medal.
Same	Catomis, Grace M		

M. A. SCOVELL, Lexington, Ky.—*Expert Judge.*

GRAND SWEEPSTAKES—BEEF BREEDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Aged herd, graded.			
Wm. Warfield, Lexington, Ky			
J. G. Robbins & Sons, Horace, Ind		First	S. Cup.
John Hooker, New London, O			
D. Bradfute & Son, Cedarville, O			
Beam & Bogart, Columbus Grove, O			
C. L. Gerlaugh, Osborn, O			
Harness & Graves, Bunkerhill, Ind			
Aaron Barber, Avon N. Y			
Darling Bros., Nellie, O			
Young herd.			
D. Bradfute & Son, Cedarville, O			
C. L. Gerlaugh, Osborn, O			
Harness & Graves, Bunkerhill, Ind			
Aaron Barber, Avon, N. Y		First	S. Cup
Darling Bros., Nellie, O			
Wm. Warfield, Lexington, Ky			
Bull 2 years old and over.			
D. Bradfute & Son, Cedarville, O	Zaire 5th		
John Hooker, New London. O			
Beam & Bogart, Columbus Grove, O			
Harness & Graves, Bunkerhill, Ind			
Aaron Barber, Avon, N. Y	Sharon Marshal		
J. A. Gerlaugh, Harshman. O			
Darling Bros., Nellie, O			
J. G. Robbins & Sons, Horace, Ind	S. Valentine	First	Medal.

GRAND SWEEPSTAKES—BEEF BREEDS—Concluded.

Owner's Name and Postoffice.	Name of Animal	Pemium.	Amount.
Bull under 2 years old.			
Beam & Bogart, Columbus Grove, O			
D. Bradfute & Son, Cedarville, O			
Same			
C. L. Gerlaugh. Osborn. O			
Harness & Graves, Bunkerhill, Ind		First	Medal.
Aaron Barber, Avon, N. Y	Grand Marshal		
Darling Bros., Nellie. O			
J. G. Robbins & Sons, Horace. Ind			
Wm. Warfield, Lexington. Ky	Superior		
Cow 2 years old or over.			
D. Bradfute & Son, Cedarville, O	Lavender		
Same	Boneta		
John Hooker, New London. O			
Beam & Bogart. Columbus Grove, O			
C. L. Gerlaugh, Osborn, O			
Harness & Graves. Bunkerhill, Ind			
Aaron Barber, Avon, N. Y		First	Medal.
Darling Bros., Nellie. O			
J. G. Robbins & Sons, Horace, Ind			
Wm. Warfield, Lexington, Ky	Celandine		
Same	Camelia		
Same	Zillah		
Same	Dainty Lady		
Cow under 2 years old.			
D. Bradfute & Son, Cedarville, O	Lassie 2d		
Same	Fancy		
John Hooker, New London, O			
Beam & Bogart, Columbus Grove. O			
C. L. Gerlaugh, Osborn, O			
Harness & Graves, Bunkerhill, Ind			
Aaron Barber. Avon, N. Y			
J. A. Gerlaugh, Harshman, O			
Darling Bros., Nellie, O			
J. G. Robbins & Sons, Horace. Ind		First	Medal.
Wm. Warfield, Lexington, Ky	Bridal Bell		
Same	Dainty Maiden		

J. P. HINE, Shinrock. O.,
F. S. BUTLER, Ridgeway, O.,
G. W. MILLIKIN, Youngstown, O.,
Judges.

OHIO STATE DAIRY TEST.

BY THE STATE BOARD OF AGRICULTURE AND THE OHIO AGRICULTURAL EXPERIMENT STATION.

More cows were entered this year in the State dairy test than in any previous one. The results show a wider range than any single year since they were entered upon, nine years ago. As in former years most of the thirteen entries for prizes in 1897 are from the Holstein herds, and are a mark of the push and enterprise of the breeders of the black and white.

In all the nine years in which these tests have been conducted the Holstein breeders have been found in the ring and in the test; they have come out winners oftener than any other breeders; with the single exception of the year 1891 the Holsteins have won the prizes for highest number of pounds of milk produced in twenty-four hours. That year the matchless cow Mayflower, a Red Polled cow from the herd of Capt. V. T. Hills, gave more than two pounds more milk than any other cow on the grounds, containing 1.71 pounds of butter fat, the largest yield made by any cow in the state dairy test up to that time. The year following, Mayflower, under the unfavorable condition of being in heat and served the day she was tested, made a slightly better test than in 1891. Tina, and Lady of Tittleshall, both Red Polled cows, were close competitors, but Lady of Lyons, a Holstein cow, made more than a half pound more butter fat than any of them, and thus an easy winner in production of butter fat.

In 1893, this same Mayflower made just as much butter fat from 48 pounds of milk as Eunice Clay, a Holstein cow, made from a little over 84 pounds of milk; but Iolena of Fairmount, with seventy pounds of milk, surpassed all previous records that same year by making 2.44 pounds of butter fat.

In 1894 the little Jersey, "Very Much," for the first time in the state test, won the butter fat premium with a showing of 2.06 pounds. The public tests of 1895 and 1896, were remarkable in having five good cows in each, the lowest showing 1.84 pounds and the highest 2.29 pounds butter fat; nine of these ten were Holsteins, and the tenth one a Jersey. The year 1897 finds thirteen entries on the books, and shows twelve Holsteins and one Red Polled. One of these Holsteins makes less than one pound of butter fat in twenty four hours, but three of them make over two pounds, and one of the three, Lucy Nudine 2nd, made 2.62 pounds of butter fat in twenty-four hours. This is the best record made by any cow in our Ohio state dairy test.

Daisy Nudine and Nancy Dew Drop each produced above two pounds, and the Red Polled cow Tryste, made 1.88 pounds, placing her fourth on the list in production of butter fat; this cow stands first in per cent. of butter fat, and first in per cent. of total solids.

In all these tests the cows have been turned over to the tester, they have been carefully milked clean before the test began, under his immediate supervision; the samples were taken as soon as each milking was completed, and at once cooled and later tested at the Experiment Station laboratory, by the chemist. This is the ninth year of the test, and the records indicate that the Holstein breeders have entered two thirds of all the cows tested; they show further that W. B. Smith and Son of Columbus, have entered and had officially tested about one half of all the Holsteins tested; they have a rightful claim for having entered the cow that gave the largest yield of milk of any cow within the State. C. W. Horr of Wellington, owns the cow that has made the greatest butter record of any cow tested to date, and entered in the state dairy test.

The Red Polled cows stand second in number of entries. Some excellent cows have been tested in the herds of J. McLain Smith, at Dayton, and in the herd of Capt. V. T. Hills, of Delaware; in but a single test have they fallen below 12 per cent. total solids, and they run as high as 14.1, while the Jerseys tested show a range of from 13.63 per cent. to 16.50 per cent. total solids. The table given in connection with these comments includes many points of interest concerning the tests of the past year, giving the name of each cow, her breed, age, date of last calf, date of test, total weight of milk, per cent. of butter fat, per cent. solids not fat, total fat, total solids not fat and total per cent. solids.

The first premium offered this year was a cup for the cow producing the greatest amount of butter fat in twenty-four hours; this was won by Lucy Nudine 2nd, with a yield of 2.62 pounds. The first premium given for the cow producing the greatest amount of solids not fat, in twenty-four hours, was won by the same cow with a yield of 6.8 pounds.

The second premium in both the above classes was won by Daisy Nudine—yield of butter fat 2.22 pounds, yield of solids not fat 5.53 pounds. The thirteen cows entered during 1897 show an average production of butter fat of a little less than one and three-fourths pounds per day, making the average more than a quarter of a pound less than the average last year. A proposition will be made to the State Board of Agriculture, to offer premiums for the cow in each breed that will produce the greatest amount of butter fat in twenty four hours and second premium for the cow producing the greatest amount of solids not fat, these to be offered to all the dairy breeds, and a sweepstakes to the cow of any breed producing the greatest amount of milk, greatest amount of butter fat and greatest amount of solids not fat.

To the rules should be added a clause barring all cows that have once taken the first premium, at the Ohio State Fair, in the dairy test.

FREMONT HICKMAN,
Tester.

STATE DAIRY TEST BY STATE BOARD OF AGRICULTURE AND OHIO AGRICULTURAL EXPERIMENT STATION.

Name of cow.	Breed.	Age.	Last calf.	Date of test.	Yield of milk in pounds.	Per cent. fat.	Per cent. solids not fat.	Pounds fat.	Pounds solids not fat.	Per cent. total solids
Tryste	Red Polled	8 years	March 26, 1897	April 13 1897	42.68	4.42	9.48	1.88	4.04	13.91
Lucy Nudine	Holstein	6 years	February 21. 1897	May 16, 1897	81.93	3.20	8.30	2.62	6.80	11.50
Daisy Nudine	"	5 years	March 13. 1897	May 17, 1897	67.43	3.30	8.31	2.22	5.60	11.61
Weehawken	"	7 years	February 13, 1897	May 28. 1897	51.31	2.70	8.99	1.38	4.61	11.06
Lili Lehman	"	7 years	May 11. 1897	"	45.43	2.40	9.66	1.09	4.16	11.46
Winnetka	"	7 years	March 3, 1897	"	47.56	2.40	8.81	1.14	4.19	11.21
Scotia 4th	"	3 years	April 10. 1897	"	29.25	2.60	8.29	0.76	2.42	10.87
Buckeye Girl 4th	"	8 years	March 20, 1897	June 8, 1897	61.87	2.90	8.84	1.79	5.46	11.74
Langtry 4th	"	5 years	March 30. 1897	"	62.50	2.90	8.18	1.81	5.11	11.08
Mary Hilton	"	2 years	May 27, 1897	"	54.68	3.00	8.25	1.64	4.50	11.23
Nancy Dew Drop	"	7 years	June 27, 1897	July 27, 1897	72.02	2.80	7.68	2.01	5.53	10.48
Kate Spray	"	5 years	June 10, 1897	"	62.68	2.60	7.85	1.63	4.92	10.45
Annual	"	5 years	June 28, 1897	"	63.68	2.80	7.82	1.78	4.98	10.62

The entries are accredited to the following persons:

Chas. W. Horr, Manager, Wellington, O.: Holsteins. Lucy Nudine 2d, Daisy Nudine.

Jno. E. Goddard, East Liverpool, O.: Holsteins, Weehawken, Winnetka, Scotia, Lili Lehman.

V. T. Hills, Delaware, O.: Red Polled, Tryste.

W. B. Smith & Son, Columbus, O.: Holsteins, Buckeye Girl 4th. Langtry 4th, Mary Hilton, Nancy Dew Drop, Kate Spray, Annual.

SHEEP—MERINOS.

G. LIGGETT, Member in charge.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
Wilson Bros., Fredericktown, O	Silver Fleece	First	$10 00
R. D. Williamson, Xenia, O			
J. M. Flanagan Niles, O	Ohio Boy		
J. Lovett & Sons, Quincy, O	McKinley		
F. W. Perkins, West Mansfield, O		Second	5 00
S. Blamer & Son, Johnstown, O			
Ram 1 year old and under 2.			
R. D. Williamson, Xenia, O			
Same			
J. M. Flanagan, Niles, O	Columbus		
J Lovett & Sons, Quincy, O			
F. W. Perkins, West Mansfield, O		First	10 00
Same		Second	5 00
S. Blamer & Son, Johnstown, O			
Ram lamb.			
Wilson Bros., Fredericktown, O	Superior		
R. D. Williamson, Xenia, O			
Same			
J. M. Flanagan, Niles, O		First	5 00
Same			
J. A. Bell & Son, Ashley, O		Second	3 00
Same			
F. W. Perkins, West Mansfield, O			
Same			
S. Blamer & Son, Johnstown, O			
Ewe 2 years old and over.			
A T. Gamber, Wakeman, O			
R. D. Williamson, Xenia, O		Second	5 00
J M. Flanagan, Niles, O	Lady King		
Same			
J. Lovett & Sons, Quincy, O		First	10 00
S. Blamer & Son, Johnstown, O			
Ewe 1 year old and under 2.			
R. D. Williamson, Xenia, O			
J. M. Flanagan, Niles, O			
Same			
J. Lovett & Sons, Quincy, O		Second	5 00
F. W. Perkins, West Mansfield, O		First	10 00
Same			
S. Blamer & Son, Johnstown, O			
Ewe lamb.			
R. D. Williamson, Xenia, O			
Same			
J. M. Flanagan, Niles, O			
Same			
J. A. Bell & Son, Ashley, O		First	5 00
Same			
F. W. Perkins, West Mansfield, O		Second	3 00
S. Blamer & Son, Johnstown, O			

FRANK MOORE, Greenspring, O—*Expert Judge.*

DELAINE MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Preminm.	Amount.
Ram 2 years old and over.			
C. S. Chapman & Son. Marysville. O	Combination 2d		
A. T. Gamber, Wakeman, O	Ohio Boy	First	$10 00
Wilson Bros., Fredericktown, O	Longfellow		
R. D. Williamson, Xenia, O			
Same			
J. M. Flanagan, Niles, O	McKinley	Second	5 00
Same			
Ram 1 year old and under 2.			
A. T. Gamber, Wakeman, O	Kenstone 2d	First	10 00
Same	Wideawake		
C. S. Chapman & Son, Marysville, O			
Same			
Wilson Bros., Fredericktown, O		Second	5 00
Same			
R. D. Williamson. Xenia, O			
J M. Flanagan, Niles, O	Boliver 3d		
Same			
Ram lamb.			
A. T. Gamber, Wakeman, O	Bouncer	Second	3 00
Same	Wooly		
C. S. Chapman & Son, Marysville, O			
Same			
Same			
W. R. Mahaffey, West Union. O			
Wilson Bros., Fredericktown, O		First	5 00
Same			
R. D. Williamson, Xenia, O			
Ewe 2 years old and over.			
A. T. Gamber, Wakeman, O	Lady Lynn	Second	5 00
Same	Model		
C. S. Chapman & Son, Marysville. O			
Same			
Wilson Bros., Fredericktown, O		First	10 00
R D. Williamson, Xenia, O			
Same			
J. M. Flanagan, Niles, O	Wooly		
Same			
S. Blamer & Son, Johnstown, O			
Ewe 1 year old and under 2.			
A. T. Gamber, Wakeman, O	A. T. G's Pride	Second	5 00
C. S. Chapman & Son, Marysville, O		First	10 00
Same			
W R. Mahaffey, West Union O			
Wilson Bros., Fredericktown, O			
R. D. Williamson, Xenia, O			
J. M. Flanagan, Niles, O			
Same			
A. T. Gamber, Wakeman, O			
Ewe lamb.			
A. T. Gamber, Wakeman, O		First	5 00
Same			
C. S. Chapman & Son, Marysville, O		Second	3 00
Same			
Same			
W. R. Mahaffey, West Union, O			
Wilson Bros, Fredericktown, O			
R. D Williamson, Xenia, O			
J. M. Flanagan, Niles, O			

FRANK MOORE, Greenspring, O.—*Expert Judge.*

FRENCH MERINOS—RAMBOUILLET.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
A. A. Bates, Irwin, O		First	$10 00
Same			
O. E. Lincoln & Son, Milford Center, O		Second	5 00
Same			
Ram 1 year old and under 2.			
A. A. Bates, Irwin, O		First	10 00
Same			
O. E. Lincoln & Son, Milford Center. O		Second	5 00
Same			
Ram lamb.			
A. A. Bates, Irwin, O		First	5 00
Same		Second	3 00
O. E. Lincoln & Son, Milford Center, O			
Same			
Ewe 2 years old and over.			
A. A. Bates, Irwin, O		First	10 00
Same			
O. E. Lincoln & Son, Milford Center, O		Second	5 00
Same			
Ewe 1 year old and under 2.			
A A Bates, Irwin, O		Second	5 00
Same			
O. E Lincoln & Son, Milford Center, O		First	10 00
Same			
Ewe lamb.			
A A Bates, Irwin, O		First	5 00
Same		Second	3 00
O E Lincoln & Son, Milford Center, O			
Same			

FRANK MOORE, Greenspring, O—*Expert Judge.*

LONG WOOLS—TO INCLUDE LINCOLNS, COTSWOLDS, AND LEICESTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
John Andregg, Basil, O			
D B and R. C Watt, Xenia, O			
J. R. Bickett, Xenia, O		Second	5 00
Wilson Bros , Muncie, Ind		First	10 00
U. G. Shetler, Wilmot, O			
Ram 1 year old and under 2.			
D. B. and R C. Watt, Xenia, O		Second	5 00
J R. Bickett, Xenia, O			
Wilson Bros , Muncie, Ind		First	10 00
U G Shelter, Wilmot, O			

LONG WOOLS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount
Ram lamb.			
D. B and R. C. Watt, Xenia, O		First	$5 00
J. R. Bickett, Xenia, O			
Same			
Wilson Bros., Muncie, Ind		Second	3 00
J. H. Woodford, Muncie, Ind			
Same			
Ewe 2 years old and over.			
D. B. and R. C. Watt, Xenia, O			
J. R. Bickett. Xenia, O			
Wilson Bros., Muncie, Ind		First	10 00
Same		Second	5 00
U. G. Shetler, Wilmot, O			
Ewe 1 year old and under 2.			
John Andregg, Basil, O			
D. B. and R. C. Watt, Xenia, O			
J. R Bickett, Xenia, O		Second	5 00
Wilson Bros., Muncie, Ind		First	10 00
Same			
U. G. Shetler, Wilmot O			
Ewe lamb.			
John Andregg, Basil, O			
D. B and R. C. Watt, Xenia, O		Second	3 00
J. R. Bickett, Xenia, O			
Same			
Wilson Bros., Muncie, Ind		First	5 00
J. H. Woodford, Muncie, Ind			
Same			

GEORGE ALLEN, Allerton, Ill.—*Expert Judge*

OXFORD DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
John Andregg, Basil, O			
Rinear Bros., Brecksville, O	Lord Darlington	First	$10 00
J. C. Williamson, Xenia, O		Second	5 00
Same			
Ram 1 year old and under 2.			
Rinear Bros., Brecksville, O		Second	5 00
J. C. Williamson, Xenia O		First	10 00
Ram lamb.			
John Andregg, Basil, O			
Rinear Bros., Brecksville. O			
J. C. Williamson. Xenia, O		First	5 00
Heskett Bros., Fulton, O		Second	3 00
Ewe 2 years old and over.			
John Andregg, Basil, O			
Rinear Bros., Brecksville, O	Lady Darlington	First	10 00
J. C. Williamson, Xenia, O		Second	5 00
Ewe 1 year old and under 2.			
John Andregg, Basil, O			
Rinear Bros., Brecksville, O		Second	5 00
J. C. Williamson, Xenia, O		First	10 00

OXFORD DOWNS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe lamb.			
John Andregg, Basil, O			
Rinear Bros, Brecksville, O			
Heskett Bros., Fulton, O	Highlands Pearl	Second	$3 00
J. C. Williamson, Xenia, O		First	5 00
Same			

ORRIN SMYTH, Suffield, O.—*Expert Judge.*

SHROPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
John Andregg, Basil, O			
Same			
H. W. Chaffee, Brecksville, O	Allever 1773	First	$10 00
T. W. Davison, Mechanicsburg, O	Davison 46		
Same		Second	5 00
S. H. Todd, Wakeman, O	Cloughs 222		
Ram 1 year old and under 2.			
John Andregg, Basil, O			
H. W. Chaffee, Brecksville, C		First	10 00
T. W. Davison, Mechanicsburg O	Todd & Son 632		
H. W. Chaffee, Brecksville, O		Second	5 00
C. W. O'Harra, Galloway, O			
John Milton, Marshall, Mich			
Ram lamb.			
John Andregg Basil, O			
H. W. Chaffee, Brecksville, O			
Same			
C. W. O'Harra, Galloway, O			
S. H. Todd, Wakeman, O	Todds 726	First	5 00
Same	Todds 727	Second	3 00
T. W. Davison, Mechanicsburg, O			
Ewe 2 years old and over.			
John Andregg, Basil, O			
Same			
H. W. Chaffee, Brecksville, O		Second	5 00
Same			
T. W. Davison, Mechanicsburg, O	Davisons 47	First	10 00
Same	Davisons 50		
S. H. Todd, Wakeman, O	Todds 607		
Ewe 1 year old and under 2.			
John Andregg, Basil, O			
H. W. Chaffee, Brecksville, O		First	10 00
Same		Second	5 00
T. W. Davison, Mechanicsburg O			
S. H. Todd, Wakeman, O	J. R. Phins 514		
Same	Todds 649		
Ewe lamb.			
John Andregg, Basil, O			
H. W. Chaffee, Brecksville, O		Second	3 00
Same			
Same			
T. W. Davison, Mechanicsburg, O	Millers 3505		
S. H. Todd, Wakeman, O	Todds 724	First	5 00
Same	Todds 723		

ORRIN SMYTH Suffield, O.—*Expert Judge.*

HAMPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
John I. Gordon, Mercer, Pa			
P. W. Artz, New Carlisle, O		Second	$5 00
Ira J. Hiller, Four Towns. Mich	Col. D., No. 2	First	10 00
W. K. Springer. Jeromeville			
John Milton, Marshall, Mich	Randolph		
Ram 1 year old and under 2.			
P. W. Artz. New Carlisle, O			
John I. Gordon, Mercer, Pa			
Same			
Ira J. Hiller Four Towns. Mich	Col. D., No. 7	Second	5 00
W. K. Springer, Jeromeville, O			
John Milton, Marshall, Mich	Royal	First	10 00
Ram lamb.			
John I. Gordon, Mercer, Pa			
Same			
P W. Artz, New Carlisle, O			
Ira J. Hiller, Four Towns. Mich	I. J. Hiller	First	5 00
W. K. Springer, Jeromeville, O			
John Milton, Marshall, Mich		Second	3 00
Ewe 2 years old and over.			
John I. Gordon, Mercer Pa			
Same			
P. W. Artz, New Carlisle, O			
Ira J. Hiller, Four Towns Mich	Lady Leicester	Second	5 00
W. K. Springer, Jeromeville, O			
Same			
John Milton, Marshall, Mich		First	10 00
Ewe 1 year old and under 2.			
John J. Gordon, Mercer, Pa			
Same			
P. W. Artz, New Carlisle, O			
Ira J. Hiller, Four Towns, Mich	I. J. Hiller		
W. K. Springer, Jeromeville, O			
Same			
John Milton, Marshall, Mich		First	10 00
Same		Second	5 00
Ewe lamb.			
John I. Gordon, Mercer, Pa			
Same			
P. W. Artz, New Carlisle, O			
Ira J. Hiller, Four Towns. Mich		Second	3 00
W. K. Springer, Jeromeville, O			
Same			
John Milton, Marshall, Mich		First	5 00
Same			

ORRIN SMYTH, Suffield, Ohio—*Expert Judge.*

SOUTH DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 years old and over.			
W. U. Nobie, Brecksville, O		First	$10 00
D. B. & R. C. Watt, Xenia, O			
C. C. Shaw & Son, Newark, O	Shaw 75	Second	5 00
Same	Shaw 100		

SOUTH DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 1 year old and under 2.			
W. U. Noble, Brecksville, O.		Second	$5 00
Same			
D. B. & R C. Watt, Xenia, O.			
C. C. Shaw & Son, Newark, O	Shaw 137	First	10 00
Ram lamb.			
W. U. Noble, Brecksvil'e, O		First	5 00
Same			
D. B. & R. C. Watt, Xenia, O.			
C. C. Shaw & Son, Newark, O.	Shaw 139	Second	3 00
Same	Shaw 144		
Ewe 2 years old and over.			
W. U. Noble Brecksville, O.		Second	5 00
Same			
D. B. & R. C. Watt, Xenia, O.			
C. C. Shaw & Son, Newark: O	Shaw 97	First	10 00
Same	G. J. H. 413		
Ewe 1 year old and under 2.			
W. U. Noble, Brecksville, O		First	10 00
Same			
D B. & R. C. Watt, Xenia, O.			
Same			
C. C. Shaw & Son, Newark, O	Shaw 126	Second	5 00
Same	Shaw 123		
Ewe lamb.			
W. U. Noble, Brecksville, O.		Second	3 00
Same			
D B. & R. C. Watt, Xenia, O.			
C. C. Shaw & Son, Newark, O.	Shaw 141	First	5 00
Same	Shaw 140		

ORRIN SMYTH, Suffield, O. —*Expert Judge.*

SWEEPSTAKES ON MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2, and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.			
R. D. Williamson Xenia, O.			
J. M. Flanagan, Niles, O.			
J Lovett & Sons, Quincy, O			
F. W. Perkins, West Mansfield, O.		First	15 00
S. Blamer & Son, Johnstown, O.			
Pen of four lambs.			
R. D. Williamson, Xenia, O.			
J. M. Flanagan, Niles, O.			
J Lovett & Sons, Quincy, O.			
F. W. Perkins, West Mansfield, O.			
S Blamer & Son, Johnstown, O.		First	15 00
J. A. Bell & Son, Ashley, O.			
Ram any age.			
Wilson Bros., Fredericktown, O			
R. D. Williamson, Xenia, O.			
J. M. Flanagan, Niles, O.			
J. Lovett & Sons, Quincy, O.		First	10 00
F W. Perkins, West Mansfield, O.			
S Blamer & Son, Johnstown, O.			

SWEEPSTAKES ON MERINOS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe any age.			
R. D. Williamson, Xenia, O			
J. M. Flanagan, Niles, O			
J. Lovett & Sons, Quincy, O			
S. Blamer & Son, Johnstown, O		First	$10 00

W. N. COWDEN, Quaker City, O.—*Expert Judge.*

SWEEPSTAKES ON DELAINE MERINOS.

Owner's Name and Postoffice	Name of Animal.	Premium.	Amount.
Flock to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2, and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.			
A. T. Gamber, Wakeman, O.			
C. S. Chapman & Son, Marysville, O			
Wilson Bros., Fredericktown, O		First	$15 00
R. D. Williamson, Xenia, O			
J. M. Flanagan, Niles, O			
Pen of 4 lambs,			
A. T. Gamber, Wakeman, O		First	15 00
C. S. Chapman & Son, Marysville, O			
Wilson Bros., Fredericktown, O			
R. D. Williamson, Xenia, O			
Ram of any age.			
A. T. Gamber, Wakeman, O			
C. S. Chapman & Son, Marysville, O			
Wilson Bros., Fredericktown, O		First	10 00
R. D. Williamson, Xenia, O			
J. M. Flanagan, Niles, O			
Ewe of any age.			
A. T. Gamber, Wakeman, O			
C. S. Chapman & Son, Marysville, O			
Wilson Bros., Fredericktown, O			
R. D. Williamson, Xenia, O			
J. M. Flanagan, Niles, O		First	10 00
S. Blamer & Son, Johnstown, O			

W. N. COWDEN, Quaker City, O.—*Expert Judge.*

SWEEPSTAKES ON RAMBOUILLETS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2, and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.			
A. A. Bates, Irwin, O		First	$15 00
O. E. Lincoln & Son, Milford Center, O			

SWEEPSTAKES ON RAMBOUILLETS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of 4 lambs.			
A. A. Bates, Irwin, O.		First	$15 00
O. E. Lincoln & Son, Milford Center. O.			
Ram of any age.			
A, A. Bates, Irwin, O.		First	10 00
Same			
O. E. Lincoln & Son, Milford Center, O.			
Ewe of any age.			
A. A. Bates. Irwin, O.		First	10 00
O. E. Lincoln & Son, Milford Center, O.			

W. N. COWDEN, QUAKER CITY, O.—*Expert Judge.*

SWEEPSTAKES ON LONG WOOLS—TO INCLUDE LEICESTERS, LINCOLNS AND COTSWOLDS.

Owner's Name and Postoffice	Name of Animal.	Premium.	Amount.
Flock to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2 and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.			
D. B. & R. C. Watt, Xenia. O.		First	$15 00
Wilson Bros., Muncie, Ind.			
Pen of 4 lambs.			
D. B & R. C. Watt, Xenia, O.			
J. H. Woodford, Muncie, Ind.		First	15 00
Ram of any age.			
John Andregg, Basil, O.			
D. B. & R. C. Watt, Xenia, O.			
J. R. Bickett, Xenia, O.			
Wilson Bros., Muncie, Ind.		First	10 00
Ewe of any age.			
J. R. Bickett, Xenia, O.			
Wilson Bros., Muncie, Ind.		First	10 00

DANIEL TAYLOR—*Expert Judge.*

SWEEPSTAKES ON SOUTHDOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock, to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2 and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.			
W. W. Noble, Brecksville, O.		First	$15 00
D. B. & R. C. Watt, Xenia, O.			
C. C. Shaw & Son, Newark, O.			

SWEEPSTAKES ON SOUTH DOWNS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of four lambs.			
W. U. Noble, Brecksville, O			
D. B. & R. C. Watt, Xenia, O			
C. C. Shaw & Son, Newark, O		First	$15 00
Ram of any age.			
W. U. Noble, Brecksville, O		First	10 00
D. B. & R. C. Watt, Xenia, O			
C. C. Shaw & Son, Newark, O			
Ewe of any age.			
W. U. Noble, Brecksville, O			
Same			
D B. & R. C. Watt, Xenia, O			
C. C. Shaw & Son, Newark, O		First	10 00

GEORGE ALLEN, Allerton, Ill.—*Expert Judge.*

SWEEPSTAKES ON OXFORD DOWNS AND HAMPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2, and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.			
John I. Gordon. Mercer. Pa		First	$15 00
Rinear Bros , Brecksville. O			
P. W. Artz, New Carlisle, O			
J. C. Williamson, Xenia, O			
Pen of 4 lambs.			
John I. Gordon, Mercer. Pa			
Rinear Bros , Brecksville, O			
Heskett Bros., Fulton, O			
J. C. Williamson, Xenia, O			
Ira J. Hiller, Four Towns, Mich		First	15 00
John Milton, Marshall, Mich			
Ram, any age.			
John Andregg, Basil, O			
John I. Gordon, Mercer, Pa			
Rinear Bros., Brecksville, O			
P. W. Artz .New Carlisle, O			
J. C. Williamson, Xenia, O			
Ira J. Hiller, Four Towns, Mich			
John Milton, Marshall, Mich		First	10 00
Ewe any age.			
John I. Gordon, Mercer. Pa			
Rinear Bros., Brecksville, O			
P. W. Artz, New Carlisle, O			
J. C. Williamson, Xenia, O			
Ira J. Hiller, Four Towns, Mich.			
John Milton, Marshall, Mich		First	10 00

GEORGE ALLEN, Allerton, Ill.—*Expert Judge.*

SWEEPSTAKES ON SHROPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock to consist of one ram of any age, one ewe 2 years old or over, one ewe 1 year old and under 2, and one ewe under 1 year. Ram to be owned and ewes owned and bred by the exhibitor.			
H W Chaffee, Brecksville, O		First	$15 00
T. W. Davison, Mechanicsburg, O			
S. H. Todd, Wakeman, O			
Pen of 4 lambs.			
H. W. Chaffee, Brecksville, O			
S. H. Todd, Wakeman, O		First	15 00
Ram, any age.			
John Andregg, Basil, O			
H. W. Chaffee, Brecksville, O		First	10 00
T. W. Davison, Mechanicsburg, O			
Ewe, any age.			
John Andregg, Basil. O			
H. W. Chaffee, Brecksville, O			
Same			
T. W. Davison, Mechanicsburg, O			
Same			
S. H. Todd, Wakeman, O		First	10 00

GEORGE ALLEN, Allerton, Ill.—*Expert Judge.*

WOOLS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Fleece of fine wool.			
A. A. Bates, Irwin, O		Second	$3 00
Same		First	5 00
Fleece of medium wool.			
A. A. Bates, Irwin, O		First	5 00
Same		Second	3 00

FRANK MOORE, Greenspring, O.—*Expert Judge.*

SPECIAL PREMIUMS OFFERED BY THE AMERICAN SHROPSHIRE REGISTRY ASSOCIATION.

Owner's Name and Postoffice.	Name of Animal	Premium.	Amount.
Flock of registered Shropshires 1 year old or over.			
H. W. Chaffee, Brecksville, O		First	$20 00
T. W. Davison, Mechanicsburg, O			
S. H. Todd, Wakeman, O			
Flock of registered Shropshire lambs.			
H. W. Chaffee. Brecksville, O			
S. H. Todd, Wakeman, O		First	15 00

GEORGE ALLEN, Allerton, Ill.—*Expert Judge.*

Special Premiums Offered by the American Southdown Breeders' Association.

Owner's Name and Postoffice.	Name of Animal	Premium	Amount.
Pen of 4 lambs—2 rams and 2 ewes			
C. C. Shaw & Son. Newark, O		First	Am. S. down record.

George Allen, Allerton, Ill.—*Expert Judge.*

Special Premiums Offered by the American Oxford Down Sheep Record Association.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pen of 4 lambs of either sex.			
Rinear Bros., Brecksville, O			
Heskett Bros.. Fulton. O		Second	$8 00
J. C. Williamson. Xenia. O		First	12 00
Yearling Ram.			
Rinear Bros.. Brecksville. O		First	10 00
J. C. Williamson. Xenia. O		Second	5 00
Yearling ewe.			
Rinear Bros , Brecksville. O		First	10 00
Same			
J. C. Williamson Xenia. O			

George Allen. Allerton, Ill.—*Expert Judge.*

Special Premium Offered by the Hampshire Down Breeders' Association.

Owner's Name and Postoffice.	Name of Animal	Premium.	Amount.
Pen of Hampshire down lambs, 2 rams and 3 ewes.			
P. W. Artz, New Carlisle, O		First	

George Allen, Allerton, Ill.—*Expert Judge.*

SWINE—J. S. STUCKEY, Member in charge.

BERKSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old or over.			
James Riley, Thorntown, Ind.	Victor III		
W. H. Mack, La Rue, Ohio	Black Knight		
Homer Bros., Greenville, Pa	Columbus Duke	First	$10 00
W. J. Tharp, Summit Station, Ohio	Elmwood		
Geo. B. Ashbaugh, Lancaster, Ohio	Daytime		
Reuben Gentry, Danville, Ky			
Same			
U. Z. Green, Indianola, Ill			
Same		Second	5 00
Boar 1 year old and under 2.			
James Riley, Thorntown, Ind	Wooddale Star	First	10 00
W. J. Tharp, Summit Station, Ohio	Billy		
L. C. Peterson, Spring Valley, Ohio			
Reuben Gentry, Danville, Ky		Second	5 00
Boar 6 months old and under 1 year.			
James Riley, Thorntown, Ind	Jesse Lee		
W. H. Mack, La Rue, Ohio	Royal Knight		
Homer Bros., Greenville, Pa	Up to Date	First	8 00
W. J. Tharp, Summit Station, Ohio	Broad Gauge		
O. P. Wolcott & Son, Conover, Ohio			
Wenzke Bros. & Co., Celina, Ohio			
L. C. Peterson, Spring Valley, Ohio			
Reuben Gentry, Danville, Ky		Second	5 00
Same			
U. Z. Green, Indianola, Ill			
Boar under 6 months old.			
James Riley, Thorntown, Ind		First	00
W. J. Tharp, Summit Station, Ohio	Brunier		
Same	Nix		
O. P. Wolcott & Son, Conover, Ohio			
Same			
L. C. Peterson, Spring Valley, Ohio			
Reuben Gentry, Danville, Ky		Second	3 00
Same			
U. Z. Green, Indianola, Ill			
Boar and three sows over 1 year old.			
James Riley, Thorntown, Ind			
George B. Ashbaugh, Lancaster, Ohio			
L. C. Peterson, Spring Valley, Ohio			
Reuben Gentry, Danville, Ky		Second	8 00
Same			
U. Z. Green, Indianola, Ill		First	15 00
Boar and three sows under 1 year old.			
James Riley, Thorntown, Ind		Second	8 00
Same			
W. H. Mack, La Rue, Ohio			
Homer Bros., Greenville, Pa		First	15 00
O. P. Wolcott & Son, Conover, Ohio			
L. C. Peterson, Spring Valley, Ohio			
Reuben Gentry, Danville, Ky			
U. Z. Green, Indianola, Ill			
Sow 2 years old or over.			
James Riley, Thorntown, Ind	Royal Beauty		
Homer Bros., Greenville, Pa	First Choice	First	10 00
W. J. Tharp, Summit Station, Ohio	Summit Queen		
L. C. Peterson, Spring Valley, Ohio			
Same			
Reuben Gentry, Danville, Ky			
Same			
U. Z. Green, Indianola, Ill		Second	5 00

BERKSHIRES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow 1 year old and under 2.			
Jas. Riley, Thorntown, Ind	Ollie		
Same	Sallie	Second	$ 5 00
Homer Bros., Greenville, Pa	Irish Lady		
W. J. Tharp, Summit Station, O	Klamate		
Geo. B. Ashbaugh, Lancaster, O	Lady Custer		
L. C. Peterson, Spring Valley, O			
Reuben Gentry, Danville, Ky			
Same			
Same			
U. Z. Green, Indianolo, Ill		First	10 00
Sow 6 months old and under 1 year.			
U. Z. Green, Indianola, Ill		Second	5 00
Same			
Jas. Riley, Thorntown, Ind	Lady Lee		
Same	Ama Lee		
Reuben Gentry, Danville, Ky			
W. H. Mack, La Rue, O	Royal Duchess III		
Same	Royal Duchess IV		
Same	Royal Duchess V		
Homer Bros., Greenville, Pa	Irish Lady		
Same	Dutch Girl	First	8 00
W. J. Tharp, Summit Station, O	Tornado		
O. P. Wolcott & Son, Conover, O			
Same			
Geo. B. Ashbaugh, Lancaster, O			
Same			
Wenzke Bros. & Co., Celina, O			
Same			
L. C. Peterson, Spring Valley, O			
Same			
Sow under 6 months old.			
Jas. Riley, Thorntown, Ind		Second	3 00
Same			
Homer Bros., Greenville, Pa	Belle Perfection	First	5 00
W. J. Tharp, Summit Station, O	Beauty		
O. P. Wolcott & Son, Conover, O			
Same			
George B. Ashbaugh, Lancaster, O			
Same			
L. C. Peterson, Spring Valley, Ohio			
Reuben Gentry, Danville, Ky			
Same			
Same			
U. Z. Green, Indianola, Ill			
Four pigs under 6 months old.			
Jas. Riley, Thorntown, Ind		Second	5 00
Homer Bros , Greenville, Pa		First	10 00
W. J. Tharp, Summit Station. O			
O. P. Wolcott & Son, Conover, O			
Geo. B. Ashbaugh, Lancaster, O			
L. C. Peterson, Spring Valley, O			
Reuben Gentry, Danville, Ky			
U. Z. Green, Indianola, Ill			

GEORGE M. EARNEST—*Expert Judge.*

POLAND CHINAS.

Owners' Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old or over.			
Fred Gosch, Chicago, O	Billy Wanamaker		
Wiseley & Ritchie, Oakwood, O	Chief Cook	Second	$5 00
Samuel Wilson, Harveysburg, O	Young Black U. S		
Hiram Ingalls, Alton, O	Wilks Trade		
J. M Klever, Bloomingburg, O	Be Sure	First	10 00
Frank Wagner, Mansfield, O			
Boar 1 year old and under 2.			
Wiseley & Ritchie, Oakwood, O	Searchlight		
L. E. Parrett, Washington C. H., O	Great Eastern		
Ed. Probasco, Wilmington, O	Klever's Success		
T. C. Robinson, Piqua, O		First	10 00
E. W. Morthland, Mansfield, O	B. F. D. Short Stop		
M. McConnell, Wakatomaka, O	Seldom	Second	5 00
John Salmon, Madison Mills, O			
Boar 6 months old and under 1 year.			
Fred Gosch, Chicago, O	Robbie		
Samuel Wilson, Harveysburg, O		Second	5 00
Oliver Planck, Camp Chase, O		First	8 00
Hiram Ingalls, Alton, O			
T. C. Robinson, Piqua, O			
Same			
Pyers Bros & Co., Nashville, O			
John Salmon, Madison Mills, O			
M. McConnell, Wakatomaka, O			
Boar under 6 months old.			
Fred Gosch, Chicago, O	Dick		
Wiseley & Ritchie Oakwood, O			
F. Kolb, Ontario, O	Victor K		
Hiram Ingalls, Alton, O			
J. M. Klever, Bloomingburg, O			
Same			
T. C. Robinson, Piqua, O			
E. W Morthland, Mansfield, O			
C W. O'Harra, Galloway, O			
Pyers Bros. & Co. Nashville, O			
John Salmon, Madison Mills, O		First	5 00
Same		Second	3 00
F. Kolb, Ontario, O			
M. McConnell, Wakatomaka, O			
Boar and three sows over 1 year old.			
Fred Gosch, Chicago, O			
Wiseley & Ritchie, Oakwood, O		First	15 00
T. C. Robinson, Piqua, O		Second	8 00
E. W. Morthland, Mansfield O			
Boar and three sows under 1 year old.			
Fred Gosch, Chicago, O			
J. M Klever, Bloomingburg, O		First	15 00
T. C. Robinson, Piqua, O			
E. W. Morthland, Mansfield, O			
Pyers Bros. & Co., Nashville, O			
John Salmon, Madison Mills, O		Second	8 00
M. McConnell, Wakatomaka, O			
Sow 2 years old or over.			
Wiseley & Ritchie, Oakwood, O	Fairy Queen		
T. C. Robinson, Piqua, O	Graceful B	Second	5 00
Same	Black Maud		
E. W. Morthland, Mansfield, O	Lottie	First	10 00
Sow 1 year old and under 2.			
Fred Gosch, Chicago, O	Pansy G.		
Same	Lady Corwin		
Wiseley & Ritchie, Oakwood, O	Graceful Lil	First	10 00
Same	Dusky Lil		
Same	Fairy Queen 2d		
Samuel Wilson, Harveysburg, O	Darkness	Second	5 00

POLAND CHINAS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow 1 year old and under 2.			
Hiram Ingalls. Alton. O	Alton Belle		
U. G. Shelter, Wilmot. O	Ohio Pride		
J. M. Klever, Bloomingburg, O			
T. C. Robinson. Piqua, O.			
E. W. Morthland, Mansfield. O.	Cute		
Pyers Bros. & Co., Nashville, O	Tecumseh Girl. 4th		
Sow 6 months old and under 1 year.			
Fred Gosch. Chicago. O			
Wiseley & Ritchie, Oakwood. O	Lady Jamison	Second	$5 00
Same	Lady Jay		
T. C. Robinson. Piqua, O			
Same			
E. W. Morthland. Mansfield, O	Daisy Price 2d		
Pyers Bros. & Co., Nashville. O			
John Salmon, Madison Mills. O		First	8 00
M. McConnell. Wakatomaka, O			
Sow under 6 months old.			
Fred Gosch. Chicago. O			
Wiseley & Ritchie, Oakwood, O			
F. Kolb, Ontario. O	Perfect 2d		
Hiram Ingalls, Alton. O			
Same			
J. M. Klever, Bloomingburg, O		First	5 00
Same			
T. C. Robinson, Piqua. O			
Same			
Frank Wagner, Mansfield, O			
E. W. Morthland Mansfield, O			
C. W. O'Harra. Galloway, O			
Pyers Bros. & Co., Nashville. O			
John Salmon, Madison Mills, O		Second	3 00
Same			
M. McConnell, Wakatomaka, O			
Four pigs under 6 months old.			
Fred Gosch. Chicago. O			
F. Kolb Ontario, O			
J. M. Klever, Bloomingburg. O		Second	5 00
T. C. Robinson. Piqua, O			
Frank Wagner, Mansfield, O			
E. W. Morthland, Mansfield. O			
Pyers Bros. & Co., Nashville, O			
John Salmon, Madison Mills, O		First	10 00
M. McConnell, Wakatomaka O			

C. R. BETTS—*Expert Judge.*

CHESTER WHITES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old and over.			
E. A. Acre, Elsie, Mich	Clipper	First	$10 00
Geo. W. Trone, Rushville Ill	Robert J		
F. A. Branch Medina, O	Bud		
U. G. Shetler, Wilmot. O	Dexter		
Wm. T. Dever, Lucasville. O	Columbia		
Pyers Bros. & Co., Nashville, O	Champion		
S. H. Todd, Wakeman O	Orient	Second	5 00
A. E. Drushel, Mt. Eaton, O			

CHESTER WHITES—Continued.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 1 year old and under 2.			
E. A. Acre, Elsie, Mich.	Dandy		
Geo. W. Trone Rushville, Ill	Ringmaster	Second	$5 00
F. A. Branch, Medina, O.	Tom B. 2d		
U G. Shetler, Wilmot, O.	Doc	First	10 00
Wm. T. Dever, Lucasville. O.	Richard		
Pyers Bros. & Co., Nashville, O.			
A. E. Drushel, Mt. Eaton, O.	W. J. Bryan		
Boar 6 months old and under 1 year.			
E. A. Acre, Elsie, Mich.			
Jacob Fike & Son, Leipsic, O.			
Geo. W. Trone, Rushville, Ill	Schuyler Boy		
F. A. Branch, Medina, O.	Silas, Jr.	Second	5 00
J. L. Beringer, Marion, O.			
U. G. Shetler, Wilmot, O.	Protections Model		
Same	Governor		
D A. Lane, Commercial Point, O			
Wm. H. Pool, Delaware. O.			
Wm. T. Dever, Lucasville, O.			
C. W. Baker, Delaware O.	Mark Hanna	First	8 00
Same	Columbus		
S. H. Todd, Wakeman, O.	Tom		
Same	Sam		
A. E. Drushel, Mt. Eaton, O.			
L. H. Martin, Alexandria, O.			
Boar under 6 months old.			
Jacob Fike & Son, Leipsic O.			
Same			
F. A. Branch, Medina, O	Bud 2d		
Same	Bud 3d		
J. L. Beringer, Marion, O.			
U. G. Shetler, Wilmot, O.	Major		
Same	Mac		
D. A. Lane, Commercial Point, O.			
Wm. H. Pool, Delaware, O.		Second	3 00
C W Baker, Delaware, O.	Billy		
Same	Tommy		
S. H. Todd, Wakeman, O.	Piper	First	5 00
Same	Victor		
A. E. Drushel, Mt. Eaton, O.			
L. H. Martin, Alexandria, O.			
Boar and three sows over 1 year old.			
E. A. Acre, Elsie, Mich.		First	15 00
George W. Trone Rushville Ill			
F. A. Branch, Medina. O			
U. G. Shetler, Wilmot, O		Second	8 00
Wm. T. Dever, Lucasville, O			
S. H. Todd, Wakeman, O.			
Boar and three sows under 1 year old.			
E. A. Acre, Elsie, Mich.			
Jacob Fike & Son, Leipsic, O.			
Geo. W. Trone, Rushville, Ill			
F. A. Branch, Medina, O		First	15 00
J. L. Beringer, Marion, O.			
U. G. Shetler, Wilmot, O.			
D. A. Lane, Commercial Point, O.			
Wm. T. Dever, Lucasville, O.			
C. W. Baker, Delaware, O.			
S. H. Todd, Wakeman O.		Second	8 00
Same			
L. H. Martin Alexandria O.			

CHESTER WHITES—Continued.

Owner's Name and Postoffice.	Name of Animal	Premium.	Amount.
Sow 2 years old or over.			
E A. Acre, Elsie, Mich			
Jacob Fike & Son, Leipsic, Ohio	Lilac 2d	Second	$5 00
Geo. W. Trone, Rushville, Ill	Snow Ball		
F. A. Branch, Medina, Ohio	Bess		
Same	Alice 2d		
U. G. Shetler, Wilmot. Ohio	Blanche		
Wm. T. Dever, Lucasville, Ohio	Isabella		
Same	Claude	First	10 00
S. H. Todd, Wakeman Ohio	Alma I		
Same	Nellie I		
A. E. Drushel, Mt. Eaton, Ohio	Lady Petro		
Sow 1 year old and under 2.			
E. A. Acre, Elsie, Mich		First	10 00
Same			
Jacob Fike & Son, Leipsic, Ohio	Daisy		
Geo. W. Trone, Rushville, Ill	Illinois Queen		
F. A. Branch, Medina, Ohio	Nellie B. 4th		
U. G. Shetler, Wilmot, Ohio	Blanche 8th		
Same	Lady		
Wm. T. Dever. Lucasville, Ohio	Fanny 2d	Second	5 00
Same	Nancy 2d		
S. H. Todd, Wakeman, Ohio	Matilda		
Same	Dorothy		
A. E. Drushel, Mt. Eaton, O.			
Sow 6 months old and under 1 year.			
E. A. Acre, Elsie, Mich			
Same			
Jacob Fike & Son, Leipsic, Ohio			
Same			
Geo. W. Trone, Rushville, Ill.			
F. A. Branch, Medina, Ohio	Silver Girl	First	8 00
Same	Silver Girl 2d	Second	5 00
J. L. Beringer. Marion, Ohio			
U. G. Shetler, Wilmot, Ohio	Dandy		
D. A. Lane, Commercial Point, Ohio			
Wm. H. Pool, Delaware Ohio			
Wm. T. Dever, Lucasville, Ohio			
Same			
C. W. Baker Delaware Ohio	Fanny		
Same	Queen		
L. H. Martin, Alexandria, Ohio			
Same			
S. H. Todd, Wakeman, Ohio	Maud		
Same	Maud I.		
A. E. Drushel, Mt. Eaton, Ohio			
Sow under 6 months old.			
E. A. Acre, Elsie, Mich			
Jacob Fike & Son, Leipsic, Ohio			
Same			
F. A. Branch, Medina, Ohio	Lady Bud		
Same	Lady Bud 2d		
J. L. Beringer. Marion. Ohio			
U. G. Shetler, Wilmot, Ohio	Daisy		
Same	Beauty		
D. A. Lane, Commercial Point, Ohio			
Same			
Wm. H. Pool, Delaware, Ohio		First	5 00
C. W. Baker, Delaware, Ohio	Esther		
Same	Pride		
S. H. Todd, Wakeman, Ohio	Jennie		
Same	Jennie I	Second	3 00
L. H. Martin, Alexandria, Ohio			

CHESTER WHITES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Four pigs under 6 months old.			
E. A. Acre, Elsie, Mich			
Jacob Fike & Son, Leipsic, O			
F. A. Branch, Medina, O		Second	$5 00
J. L. Beringer, Marion, O			
U. G. Shetler, Wilmot, O			
Wm. H. Pool, Delaware, O		First	$10 00
C. W. Baker, Delaware, O			
S. H. Todd, Wakeman, O			
A. E. Drushel, Mt. Eaton, O			
L. H. Martin, Alexandria, O			

C. R. BETTS—*Expert Judge.*

VICTORIAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old or over.			
Geo. Ineichen, Celina, O	Jumbo	Second	$5 00
Wenzke Bros. & Co., Celina, O		First	10 00
Boar 1 year old and under 2.			
Geo. Ineichen, Celina, O	McKinley	Second	5 00
Wenzke Bros. & Co., Celina, O		First	10 00
Boar 6 months old and under 1 year.			
Geo. Ineichen, Celina, O	Broadvelt	First	8 00
Same			
Wenzke Bros. & Co., Celina, O		Second	5 00
Boar under 6 months.			
Geo. Ineichen, Celina, O		First	5 00
Same		Second	3 00
Wenzke Bros. & Co., Celina, O			
Boar and three sows over 1 year old.			
Geo. Ineichen, Celina, O		First	15 00
Wenzke Bros. & Co., Celina, O		Second	8 00
Boar and three sows under 1 year old.			
Geo. Ineichen, Celina, O		First	15 00
Wenzke Bros. & Co., Celina, O		Second	8 00
Sow 2 years old or over.			
Geo. Ineichen, Celina, O	Lady Greenville	First	10 00
Same	Alice	Second	5 00
Wenzke Bros. & Co., Celina, O			
Sow 1 year old and under 2.			
Geo. Ineichen, Celina, O	Bell	First	10 00
Same	Beauty		
Wenzke Bros. & Co., Celina, O		Second	5 00
Same			
Sow 6 months old and under 1 year.			
Geo. Ineichen, Celina, O		Second	5 00
Same			
Wenzke Bros. & Co., Celina, O		First	8 00

VICTORIAS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow under 6 months old.			
Geo. Ineichen, Celina, O.		First	$5 00
Wenzke Bros. & Co., Celina, O.		Second	3 00
Four pigs under 6 months old.			
Geo. Ineichen, Celina, O.		Second	5 00
Wenzke Bros. & Co., Celina, O.		First	10 00

W. B. WALLACE and GEO. M. EARNEST—*Expert Judges.*

DUROC JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 years old or over.			
C. Borradaile, Camden, O.	Dexter	First	$10 00
Same	Come & See	Second	5 00
Geo. W. Trone, Rushville, Ill.	Washington		
Boar 1 year old and under 2.			
C. Borradaile, Camden, O.	Herbert		
O. Walter & Bro., Lebanon, O.	Judge Wonder	First	10 00
Same	U. S. Wonder	Second	5 00
Boar 6 months old and under 1 year.			
C. Borradaile, Camden, O.	King Cork		
Same	Banker	First	8 00
Geo. W. Trone, Rushville, Ill.	Ring Master	Second	5 00
Boar under 6 months old.			
C. Borradaile, Camden, O.			
Same			
Geo. W. Trone, Rushville Ill.	Morning Star	Second	3 00
O. Walter & Bro., Lebanon, O.		First	5 00
Boar and three sows over 1 year old.			
C. Borradaile, Camden, O.		First	15 00
Geo. W. Trone, Rushville, Ill.			
O. Walter & Bro., Lebanon, O.		Second	8 00
Same			
Boar and three sows under 1 year old.			
C. Borradaile, Camden, O.		First	15 00
Geo. W. Trone, Rushville, Ill.		Second	8 00
O. Walter & Bro., Lebanon, O.			
Sow 2 years old or over.			
C. Borradaile Camden, O.	Perfect		
Sam	Lady Cedar	First	10 00
Geo. W. Trone, Rushville, Ill.	White Oak Belle 2d		
O. Walter & Bro., Lebanon, O.	Lucy Wonder II	Second	5 00
Same	Walter's Queen		
Sow 1 year old and under 2.			
C. Borradaile, Camden, O.	My Pride	Second	5 00
Same	Sunshine II		
Geo. W. Trone, Rushville, Ill.	Eldora		
O. Walter & Bro., Lebanon, O.	Bessie Wonder II	First	10 00
Same	Young Duchess III		

DUROC JERSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Sow 6 months old and under 1 year.			
C. Borradaile, Camden, O.	Ohio Girl 2d		
Same	Ohio Girl 3d		
Same	Ohio Girl 4th		
Same		Second	$5 00
Geo. W. Trone, Rushville, Ill.		First	8 00
O. Walter & Bro., Lebanon, O.	Lucy Wonder		
Same	Lady Walter		
Sow under 6 months old.			
C. Borradaile, Camden, O.		Second	3 00
Same			
Geo. W. Trone, Rushville, Ill.		First	5 00
O. Walter & Bro. Lebanon, O.	Lucy Wonder XI		
Four pigs under 6 months old.			
C. Borradaile, Camden, O.			
Geo. W. Trone, Rushville, Ill.		First	10 00
O. Walter & Bro., Lebanon, O.		Second	5 00

GEO. M. EARNEST—*Expert Judge.*

SUFFOLK, YORKSHIRE, CHESHIRE, AND ESSEX.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 1 year old or over.			
Geo. A. Ineichen, Celina, O			
Foot Bros., Medina, O		Second	$5 00
F. B. Stewart, Espyville Sta., Pa	Chenango Star	First	10 00
Boar under 1 year old.			
A. J. Wilson, Pittsfield, O	Dominion 4th		
Geo. A. Ineichen, Celina, O			
Foot Bros. Medina, O		Second	5 00
F. B. Stewart, Espyville, Sta. Pa	Chenango Conner	First	10 00
Sow 1 year old or over.			
A. J. Wilson, Pittsfield, O	Franklin 4th		
Same	Rose Bud		
Geo. A. Ineichen, Celina, O			
F. B. Stewart, Espyville Sta., Pa		First	10 00
Same		Second	5 00
Sow under 1 year old.			
A. J. Wilson, Pittsfield, O	Winnie	Second	5 00
Geo. A. Ineichen, Celina, O			
Foot Bros., Medina, O		First	10 00
F. B. Stewart, Espyville Sta., Pa			

GEO. M. EARNEST—*Expert Judge.*

SWEEPSTAKES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Berkshire boar any age.			
Jas. Riley, Thorntown, Ind			
Same			
W. H. Mack, La Rue, O			
Homer Bros , Greenville, Pa		First	$10 00
Same			
W. J. Tharp, Summit Sta., O			
Geo. B. Ashbaugh, Lancaster, O			
L. C. Peterson, Spring Valley, O			
Reuben Gentry, Danville, Ky			
Same			
U. Z. Green, Indianola, Ill			
Berkshire sow any age.			
Jas Riley, Thorntown, Ind			
Same			
W. H. Mack, La Rue, O			
Homer Bros , Greenville, Pa			
O. P. Wolcott & Son, Conover, O			
L. C. Peterson, Spring Valley O			
Reuben Gentry, Danville, Ky			
Same			
U. Z. Green, Indianola, Ill		First	10 00
Poland China boar any age.			
Fred Gosch, Chicago, O	Billy Wanamaker		
Wiseley & Ritchie, Oakwood, O	Chief Cook		
Samuel Wilson, Harveysburg, O			
L. E. Parrett, Washington C. H., O	Great Eastern		
J. M. Klever, Bloomingburg, O	Be Sure	First	10 00
T. C. Robinson, Piqua. O			
E. W Morthland, Mansfield, O			
M. McConnell, Wakatomaka, O			
John Salmon, Madison Mills, O			
Poland China sow any age.			
Fred Gosch, Chicago, O	Pansy G		
Wiseley & Ritchie, Oakwood, O	Graceful Lill		
Samuel Wilson, Harveysburg, O		First	10 00
Hiram Ingalls, Alton, O	Alton Belle		
T. C. Robinson, Piqua, O			
Same			
E. W. Morthland, Mansfield, O			
John Salmon, Madison, Mills, O			
Chester White boar any age.			
E. A. Acre, Elsie, Mich		First	10 00
Geo. W. Trone, Rushville, Ill	Robert J		
F. A Branch, Medina, O			
Same			
U. G. Shetler, Wilmot, O			
Same			
Wm T. Dever, Lucasville, O			
Pyers Bros. & Co., Nashville, O			
S. H. Todd, Wakeman, O			
A. E Drushel, Mt. Eaton, O			
Chester White sow any age.			
E. A. Acre, Elsie, Mich			
Jacob Fike & Son, Leipsic, O	Lilac 2d		
Geo. W. Trone, Rushville, Ill	Snow Ball		
F. A. Branch, Medina, O			
Same	Silver Girl	First	10 00
U. G. Shetler, Wilmot, O			
Wm. T. Dever, Lucasville, O			
S H. Todd, Wakeman, O			
A. E. Drushel, Mt. Eaton, O			
W. T. Dever, Lucasville, O			
Same			

SWEEPSTAKES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Duroc Jersey boar any age.			
C. Borradaile, Camden, O.			
Geo. W. Trone, Rushville, Ill.	Washington		
O. Walter & Bro, Lebanon, O.	Judge Wonder	First	$10 00
Same	U. S. Wonder		
Duroc Jersey sow any age.			
C. Borradaile, Camden, O.			
Geo. W. Trone, Rushville, Ill.			
O. Walter & Bro., Lebanon, O.	Lucy Wonder II		
Same	Bessie Wonder II	First	10 00

W. B. WALLACE—*Expert Judge.*

SPECIAL PREMIUMS OFFERED BY THE OHIO POLAND CHINA RECORD CO.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Poland China boar and two sows any age.			
Fred Gosch, Chicago, O.			
E. W. Morthland, Mansfield, O.			
John Salmon, Madison Mills, O.		First	*
J. M. Klever, Bloomingburg, O.			
Poland China boar pig under 1 year old.			
Oliver Planck, Camp Chase, O.		First	*
Hiram Ingalls, Alton, O.			
John Salmon, Madison Mills, O.			
M. McConnell, Wakatomaka, O.			
J. M. Klever, Bloomingburg, O.			

GEO. M. EARNEST, C. R. BETTS, W. B. WALLACE—*Expert Judges.*

SPECIAL PREMIUMS OFFERED BY THE AMERICAN CHESTER-WHITE RECORD ASSOCIATION.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Three Chester White pigs under 1 year old.			
L. H. Martin, Alexandria, O.		First	†

GEO. M. EARNEST, C. R. BETTS, W. B. WALLACE—*Expert Judges.*

* Poland China Record.

† American Chester White Record.

LIST OF AWARDS.

POULTRY—J. S. Stuckey, Member in charge.

Class 1—American.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Barred Plymouth Rock.		
George M. Leffel, Springfield, O	Best cock	$1 25
W. T. Easton, Watkins, O	2d "	75
George M. Leffel, Springfield, O	Best cockerel	1 25
I. O. Tritt, Urbana, O	2d "	75
W. T. Easton, Watkins, O	Best hen	1 25
George M. Leffel, Springfield, O	2d "	75
Joe Farmer, Flushing, O	Best pullet	1 25
George M. Leffel, Springfield, O	2d "	75
Same	Best breeding pen	2 00
Joe Farmer, Flushing, O	2d "	1 00
White Plymouth Rock.		
Thomas Corry, New Carlisle, O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
S. E. Wurst, Elyria, O	Best cockerel	1 25
Thomas Corry, New Carlisle, O	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Same	Best breeding pen	2 00
J. R. Vanatta, Mt. Gilead, O	2d "	1 00
Buff Plymouth Rock.		
C. Thumm, Salem, O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Wm. T. Linn, Ashley, O	Best cockerel	1 25
Same	2d "	75
C. Thumm, Salem, O	Best hen	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Wm. T. Linn, Ashley, O	Best pullet	1 25
Same	2d "	75
Same	Best breeding pen	2 00
Same	2d "	1 00
White Wyandotte.		
G. R. Baxter, Hillsdale, Mich	Best cock	1 25
J. R. Ross & Son, Level, O	2d "	75
J. M. Yoeder, Millersburg, O	Best cockerel	1 25
J. R. Ross & Son, Level, O	2d "	75
Same	Best hen	1 25
G. R. Baxter, Hillsdale, Mich	2d "	75
J. Yoeder, Millersburg, O	Best pullet	1 25
G. R. Baxter, Hillsdale, Mich	2d "	75
Same	Best breeding pen	2 00
J. M. Yoeder, Millersburg, O	2d "	1 00
Silver Wyandotte.		
J. R. Ross and Son, Level, O	Best cock	1 25
G. G. Wherry, Galena, O	2d "	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
S. E. Wurst, Elyria, O	2d "	75
Fritch Bros., Prospect, O	Best hen	1 25
Same	2d "	75
J. F. Converse & Co., Woodville, N. Y	Best pullet	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
Fritch Bros., Prospect, O	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d "	1 00
Golden Wyandotte.		
S. B. McFarland, Sunbury, O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d "	75
J. R. Ross & Son, Level, O	Best cockerel	1 25
S. B. McFarland, Sunbury, O	2d "	75
Same	Best hen	1 25
J. R. Ross & Son, Level, O	2d "	75
Clyde E. Smith & Co., Ashley, O	Best pullet	1 25
S. B. McFarland, Sunbury, O	2d "	75
Same	Best breeding pen	2 00
Frank Ward, Tiffin, O	2d "	1 00

CLASS 1—AMERICAN—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Black Wyandotte.		
J. R. Ross & Son, Level, O.	Best cock	$1 25
C. S. Davis, Allis Hollow, Pa	2d best cock	75
Fritch Bros., Prospect, O	Best cockerel	1 25
Thomas Corry, New Carlisle, O	2d best cockerel	75
C. S. Davis, Allis Hollow, Pa	Best hen	1 25
Thomas Corry, New Carlisle, O	2d best hen	75
Fritch Bros., Prospect, O	Best pullet	1 25
Thomas Corry, New Carlisle, O	2d best pullet	75
Buff Wyandotte.		
J. J. Zimmer, Zimmer, O	Best cock	1 25
M. M. Myers, New Dover, O	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d best cockerel	75
M. M. Myers, New Dover, O	Best hen	1 25
C. A. Arend & Bros., Miamisburg, O	2d best hen	75
A. G. Oliver, Newark Del	Best pullet	1 25
J. J. Zimmer, Zimmer, O	2d best pullet	75
Black Java.		
J. R Ross & Son, Level, O	Best cock	1 25
Foote Bros., Medina, O	2d best cock	75
J. R. Vanatta, Mt. Gilead, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d best cockerel	75
J. R. Vanetta, Mt. Gilead, O	Best hen	1 25
S. E. Wurst, Elyria, O	2d best hen	75
J R. Vanatta, Mt. Gilead, O	Best pullet	1 25
Same	2d best pullet	75
Chas. Gammerdinger, Columbus, O	Best breeding pen	2 00
J. R. Vanatta, Mt. Gilead, O	2d best breeding pen	1 00

CLASS 2—ASIATIC.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Light Brahma.		
Thomas Corry, New Carlisle, O	Best cock	$1 25
Chas. Gammerdinger, Columbus O	2d best cock	75
Same	Best cockerel	1 25
A. G. Oliver, Newark, Del.	2d best cockerel	75
Chas. Gammerdinger, Columbus, O	Best hen	1 25
Same	2d best hen	75
Same	Best pullet	1 25
A. G. Oliver, Newark, Del	2d best pullet	75
Chas. Gammerdinger, Columbus, O	Best breeding pen	2 00
Dark Brahma.		
E. C. Fletcher, Wakeman, O	Best cock	1 25
John A. Meeks, Findlay, O	2d best cock	75
J. R. Ross & Son, Level, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d best cockerel	75
E. C. Fletcher, Wakeman, O	Best hen	1 25
J. H. Shower, Basil, O	2d best hen	75
J. R. Ross & Son, Level, O	Best pullet	1 25
Chas. Gammerdinger, Columbus, O	2d best pullet	75
John A. Meeks, Findlay, O	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d best breeding pen	1 00

CLASS 2—ASIATIC—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Buff Cochin.		
A. G. Oliver, Newark, Del	Best cock	$1 25
J. R. Ross & Son, Level, O.	2d best cock	75
Earl Shaw, Bloomingburg, O	Best cockerel	1 25
Same	2d best cockerel	75
J. R. Ross & Son, Level, O	Best hen	1 25
A. G. Oliver, Newark, Del	2d best hen	75
Earl Shaw, Bloomingburg, O	Best pullet	1 25
Same	2d best pullet	75
Chas. Gammerdinger, Columbus, O	Best breeding pen	1 25
Partridge Cochin.		
H. V. Shoemaker, Ashley, O	Best cock	1 25
Clyde E. Smith & Co., Ashley, O	2d best cock	75
Same	Best cockerel	1 25
John H. Shower, Basil, O	2d best cockerel	75
Clyde E. Smith & Co., Ashley, O	Best hen	1 25
Same	2d best hen	75
Same	Best pullet	1 25
Same	2d best pullet	75
Same	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d best breeding pen	1 00
White Cochin.		
W S. Carle, New Garden, O	Best cock	1 25
J. R. Ross & Son, Level, O	2d best cock	75
W. S. Carle, New Garden, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d best cockerel	75
W. S Carle, New Garden, O	Best hen	1 25
J. R. Ross & Son, Level, O	2d best hen	75
W S. Carle, New Garden, O	Best pullet	1 00
Same	2d best pullet	75
Black Cochin.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
G. R. Baxter, Hillsdale, Mich	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
J. R. Ross & Son, Level, O	2d best cockerel	75
Same	Best hen	1 25
A. G. Oliver, Newark, Del	2d best hen	75
Same	Best pullet	1 25
Chas. Gammerdinger, Columbus, O	2d best pullet	75
Black Langshan.		
Thos. S. Falkner, Tiffin, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
Same	Best cockerel	1 25
Thos. S. Falkner, Tiffin, O	2d best cockerel	75
A. G. Oliver, Newark, Del	Best hen	1 25
Thomas Corry, New Carlisle, O	2d best hen	75
Thos. S. Falkner, Tiffin, O	Best pullet	1 25
Chas. Gammerdinger, Columbus, O	2d best pullet	75
Thos. S. Falkner, Tiffin, O	Best breeding pen	2 00
John H. Shower, Basil, O	2d best breeding pen	1 00

CLASS 3—MEDITERRANEAN.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
S. C. Brown Leghorn.		
Mrs. E. Gammerdinger, Columbus, O	Best cock	$1 25
Heber Hole, Ripleyville, O	2d "	75
L. M. Minard, Elyria, O	Best cockerel	1 25
J. R. Vanatta, Mt. Gilead, O	2d "	75
Same	Best hen	1 25
J. M. Yoeder, Millersburg, O	2d "	75
L. M. Minard, Elyria, O	Best pullet	1 25
J. R. Vanatta, Mt. Gilead, O	2d "	75
Mrs. E. Gammerdinger, Columbus, O	Best breeding pen	2 00
J. T. Hanawalt, Delaware, O	2d "	1 00
R. C. Brown Leghorn.		
J. R. Ross and Son, Level, O	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O	2d "	75
J. R. Ross and Son, Level, O	Best cockerel	1 25
Mrs E. Gammerdinger, Columbus, O	2d "	75
S. E. Wurst, Elyria, O	Best hen	1 25
Mrs. E. Gammerdinger, Columbus, O.	2d "	75
J. R. Ross and Son, Level, O	Best pullet	1 25
J. F. Lutz, Amanda, O	2d "	75
Mrs. E. Gammerdinger, Columbus, O	Best breeding pen	2 00
Bohannan and Short, Columbus, O	2d "	1 00
S. C. White Leghorn.		
J. R. Vanatta, Mt. Gilead, O	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O	2d "	75
S. E. Wurst, Elyria, O	Best cockerel	1 25
J. R. Ross and Son, Level, O	2d "	75
Foote Bros., Medina. O	Best hen	1 25
A. G. Oliver, Newark, Del	2d "	75
S. E. Wurst, Elyria, O	Best pullet	1 25
J. R. Ross and Son, Level, O	2d "	75
J. R. Vanatta, Mt. Gilead, O	Best breeding pen	2 00
Mrs. E. Gammerdinger, Columbus, O	2d "	1 00
R. C. White Leghorn.		
Mrs. E. Gammerdinger, Columbus, O	Best cock	1 25
S. E. Wurst, Elyria O	2d best cock	75
Mrs. E. Gammerdinger, Columbus, O	Best cockerel	1 25
S. E. Wurst, Elyria, O	2d best cockerel	75
J. R. Vanatta, Mt. Gilead. O	Best hen	1 25
S. E. Wurst, Elyria, O	2d best hen	75
Foote Bros., Medina. O	Best pullet	1 25
J. R. Ross and Son, Level, O	2d best pullet	75
Black Leghorn.		
J. R. Ross and Son, Level. O	Best cock	1 25
G R. Baxter, Hillsdale, Mich	2d best cock	75
Mrs. E. Gammerdinger, Columbus, O	Best cockerel	1 25
S. E. Wurst, Elyria, O	2d best cockerel	75
Mrs. E. Gammerdinger, Columbus, O	Best hen	1 25
G. R. Baxter Hillsdale, Mich	2d best hen	75
S. E. Wurst, Elyria, O	Best pullet	1 25
A. G Oliver, Newark, Del	2d best pullet	75
Buff Leghorn.		
J. R. Ross and Son, Level, O	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best cockerel	75
W. S. Carle, New Garden, O	Best hen	1 25
Robert Bell, Ashley, O	2d best hen	75
Same	Best pullet	1 25
Same	2d best pullet	75
Mrs. E. Gammerdinger, Columbus, O	Best breedidg pen	2 00
Black Minorca.		
P. Ehrbar, Tiffin. O	Best cock	1 25
R. Mairet, Akron, O	2d best cock	75
Clyde E. Smith and Co., Ashley, O	Best cockerel	1 25

CLASS 3—MEDITERRANEAN—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Black Minorca—Concluded.		
R. Mairet, Akron, O	2d best cockerel	$ 75
Same	Best hen	1 25
Same	2d best hen	75
Clyde E. Smith & Co., Ashley, O	Best pullet	1 25
Same	2d best pullet	75
P. Ehrbar, Tiffin, O	Best breeding pen	2 00
Clyde E. Smith & Co., Ashley, O	2d best breeding pen	1 00
Blue Andalusians.		
J. R. Ross & Son, Level, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
J. R. Vanatta, Mt. Gilead, O	Best cockerel	1 25
Foote Bros., Medina, O	2d best cockerel	75
A. G. Oliver, Newark, Del	Best hen	1 25
M. S. Heabler, Bucyrus, O	2d best hen	75
G. R. Baxter, Hillsdale, Mich	Best pullet	1 25
A. G. Oliver, Newark, Del	2d best pullet	75
Black Spanish.		
Rowe & Eustice, Columbus, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
Rowe & Eustice, Columbus, O	Best cockerel	1 25
Same	2d best cockerel	75
Same	Best hen	1 25
Same	2d best hen	75
Same	Best pullet	1 25
Same	2d best pullet	75
Same	Best breeding pen	2 00

CLASS 4—POLISH.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
W. C. Black Polish.		
A. G. Oliver, Newark, Del	Best cock	$1 25
Same	2d best cock	75
Mrs. A. G. Stultz, Sunbury, O	Best cockerel	1 25
Same	2d best cockerel	75
A. G. Oliver, Newark, Del	Best hen	1 25
J. R. Ross & Son, Level, O	2d best hen	75
Mrs. A. G. Stultz, Sunbury, O	Best pullet	1 25
Same	2d best pullet	75
Silver Polish.		
A. G. Oliver, Newark, Del	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best cockerel	75
A. G. Oliver, Newark, Del	Best hen	1 25
J. R. Ross & Son, Level, O	2d best hen	75
A. G. Oliver, Newark, Del	Best pullet	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best pullet	75
Same	Best breeding pen	2 00
White Polish.		
J. F. Lutz, Amanda, O	Best cock	1 25
S. E. Wurst, Elyria, O	2d best cock	75
J. R. Vanatta, Mt. Gilead, O	Best cockerel	1 25
F. Hartline, Strasburg, O	2d best cockerel	75
J. R. Vanatta, Mt. Gilead, O	Best hen	1 25
Same	2d best hen	75
F. Hartline, Strasburg, O	Best pullet	1 25
J. R. Vanatta, Mt. Gilead, O	2d best pullet	75
Same	Best breeding pen	2 00
Mrs. E. Gammerdinger, Columbus, O	2d best breeding pen	1 00

CLASS 4—POLISH—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Golden Polish.		
A. G. Oliver, Newark, Del	Best cock	$1 25
Mrs. E. Gammerdinger, Columbus, O	2d best cock	75
Same	Best cockerel	1 25
Same	2d best cockerel	75
A. G. Oliver, Newark, Del	Best hen	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best hen	75
Same	Best pullet	1 25
Same	2d best pullet	75
Same	Best breeding pen	2 00
E. C. Fletcher, Wakeman, O	2d best breeding pen	1 00
Bearded White Polish.		
Mrs. E. Gammerdinger, Columbus, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
Mrs. E. Gammerdinger, Columbus, O	Best cockerel	1 25
Same	2d best cockerel	75
G. R. Baxter, Hillsdale, Mich	Best hen	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best hen	75
A. G. Oliver, Newark, O	Best pullet	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best pullet	75
Same	Best breeding pen	2 00
Buff Laced Polish.		
A. G. Oliver, Newark, Del	Best cock	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
Same	Best hen	1 25
Mrs. E. Gammerdinger, Columbus, O	2d best hen	75
A. G. Oliver, Newark, Del	Best pullet	1 25

CLASS 5—HAMBURG.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Golden Spangled Hamburg.		
Chas. Gammerdinger, Columbus, O	Best cock	$1 25
Foote Bros., Medina, O	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
J. F. Lutz, Amanda, O	2d best cockerel	75
M. M. Myers, New Dover, O	Best hen	1 25
A. G. Oliver, Newark, Del	2d best hen	75
Same	Best pullet	1 25
G. R. Baxter, Hillsdale, Mich	Best breeding pen	2 00
Silver Spangled Hamburg.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
Chas. Gammerdinger, Columbus, O	Best cockerel	1 25
J. R. Ross & Son, Level, O	2d best cockerel	75
G. G. Wherry, Galena, O	Best hen	1 25
Same	2d best hen	75
Same	Best pullet	1 25
Same	2d best pullet	75
Chas. Gammerdinger, Columbus, O	Best breeding pen	2 00
G. G. Wherry, Galena, O	2d best breeding pen	1 00
Golden Penciled Hamburg.		
A. G. Oliver, Newark, Del	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
J. R. Vanatta, Mt. Gilead, O	Best hen	1 25
Same	2d best hen	75
A. G. Oliver, Newark, Del	Best pullet	1 25

CLASS 5—HAMBURG—Concluded.

Owner's Name and Postoffice.	Name of Fowl.	Amount.
Silver Penciled Hamburg.		
A. G. Oliver, Newark, Del	Best cock	$1 25
Foote Bros., Medina, O	2d best cock	75
A. G. Oliver. Newark, Del	Best cockerel	1 25
J. R. Ross & Son, Level, O	2d best cockerel	75
A. G. Oliver, Newark, Del	Best Hen	1 25
C. Gammerdinger, Columbus, O	2d best hen	75
A. G. Oliver, Newark, Del	Best pullet	1 25
Foote Bros., Medina, O	2d best pullet	75
Black Hamburg.		
A. G. Oliver, Newark, Del	Best cock	1 25
S. E. Wurst, Elyria, O	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
J. F. Lutz, Amanda, Del	2d best cockerel	75
A. G. Oliver, Newark, Del	Best hen	1 25
Thos. Corry, New Carlisle, O	2d best hen	75
G. R. Baxter, Hillsdale, Mich	Best pullet	1 25
Same	2d best pullet	75
Red Cap.		
E. C. Fletcher, Wakeman, O	Best cock	1 25
Albert Nye, New Washington, O	2d best cock	75
J. R. Ross & Son, Level, O	Best cockerel	1 25
Same	Best hen	1 25
E. C. Fletcher, Wakeman, O	2d best hen	75
J. R. Ross & Son. Level, O	Best pullet	1 25

CLASS 6—FRENCH.

Owner's Name and Postoffice.	Name of Fowl.	Amount.
Houdan.		
Thos. Corry, New Carlisle, O	Best cock	$1 25
H. V. Shoemaker, Ashley, O	2d best cock	75
Clyde E. Smith & Co., Ashley, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d best cockerel	75
Clyde E. Smith & Co., Ashley, O	Best hen	1 25
H. V. Shoemaker, Ashley, O	2d best hen	75
Clyde E. Smith & Co., Ashley, O	Best pullet	1 25
H. V. Shoemaker, Ashley, O	2d best pullet	75
Clyde E. Smith & Co., Ashley, O	Best breeding pen	2 00
H. V Shoemaker, Ashley, O	2d best breeding pen	1 00
Crevecoeur and La Fleche.		
Chas. Gammerdinger, Columbus, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
S. E. Wurst, Elyria, O	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d best cockerel	75
Same	Best hen	1 25
Same	2d best hen	75
Same	Best pullet	1 25
S. E. Wurst, Elyria, O	2d best pullet	75
Chas. Gammerdinger, Columbus, O	Best breeding pen	2 00

CLASS 7—DORKING.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Silver Grey Dorking.		
Chas. Gammerdinger. Columbus, O	Best cock	$1 25
Albert Nye, New Washington, O.	2d best cock	75
Same	Best cockerel	1 25
F. Hartline, Strasburg. O	2d best cockerel	75
Chas. Gammerdinger. Columbus, O	Best hen	1 25
A. G. Oliver, Newark, Del	2d best hen	75
Same	Best pullet	1 25
Albert Nye, New Washington, O	2d best pullet	75
Colored Dorking.		
A. G Oliver. Newark, Del	Best cock	1 25
J. R. Ross & Son, Level. O	2d best cock	75
A. G. Oliver. Newark. Del.	Best cockerel	1 25
Chas. Gammerdinger. Columbus, O	2d best cockerel	75
A. G. Oliver. Newark, Del	Best hen	1 25
Thomas Corry, New Carlisle, O	2d best hen	75
A. G. Oliver. Newark, Del	Best pullet	1 25
Chas. Gammerdinger. Columbus, O	2d best pullet	75

CLASS 8—GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Black Breasted Red Game.		
A. G. Oliver, Newark. Del	Best cock	1 25
J. R. Ross & Son, Level. O	2d best cock	75
Chas. Gammerdinger. Columbus, O	Best cockerel	1 25
A. G. Oliver, Newark. Del	2d best cockerel	75
Same	Best hen	1 25
Chas. Gammerdinger. Columbus. O	2d best hen	75
A. G. Oliver. Newark, Del	Best pullet	1 25
Chas. Gammerdinger, Columbus, O	2d best pullet	75
Same	Best breeding pen	2 00
Sumatra Game.		
M. M. Myers. New Dover. O	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d best cock	75
Same	Best cockerel	1 25
Same	2d best cockerel	75
M. M. Myers, New Dover. O	Best hen	1 25
Chas. Gammerdinger Columbus, O	2d best hen	75
Same	Best pullet	1 25
Same	2d best pullet	75
Same	Best breeding pen	2 00
Golden Duck-Wing Game		
A. G. Oliver. Newark. Del	Best cock	1 25
Same	2d best cock	75
G. R. Baxter. Hillsdale. Mich	Best cockerel	1 25
A. G. Oliver, Newark. Del	2d best cockerel	75
Same	Best hen	1 25
Same	2d best hen	75
Same	Best pullet	1 25
Chas. Gammerdinger, Columbus, O	2d best pullet	75
Silver Duck-Wing Game.		
A. G. Oliver. Newark, Del	Best cock	1 25
Chas Gammerdinger. Columbus, O	2d best cock	75
A. G. Oliver, Newark. Del	Best cockerel	1 25
Chas. Gammerdinger. Columbus, O	2d best cockerel	75
A. G. Oliver Newark. Del	Best hen	1 25
Chas. Gammerdinger. Columbus. O	2d best hen	75
A. G. Oliver, Newark, Del	Best pullet	1 25
Chas. Gammerdinger. Columbus. O	2d best pullet	75

Class 8—Game—Concluded.

Owner's Name and Postoffice.	Name of Fowl.	Amount.
Red Pile Game.		
A. G. Oliver, Newark, Del	Best cock	$1 25
Thomas Corry, New Carlisle, O	2d best cock	75
A. G. Oliver, Newark Del	Best cockerel	1 25
Chas. Gammerdinger, Columbus, O	2d best cockerel	75
A. G. Oliver, Newark, Del	Best hen	1 25
Same	2d best hen	75
Same	Best pullet	1 25
Chas. Gammerdinger, Columbus, O	2d best pullet	75
Cornish Indian Game.		
F. D. Bennett, Galena, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
F. D. Bennett, Galena, O	Best cockerel	1 25
Same	2d best cockerel	75
J. R. Ross & Son, Level, O	Best hen	1 25
H. V. Shoemaker, Ashley, O	2d best hen	75
Clyde E. Smith & Co., Ashley, O	Best pullet	1 25
F. D. Bennett, Galena, O	2d best pullet	75
Same	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d best breeding pen	1 00

Class 9—Game Bantam.

Owner's Name and Postoffice.	Name of Fowl.	Amount.
B. B. R. Bantam.		
J. R. Ross & Son, Level, O	Best cock	$1 25
L. Rottman, Benton, O	2d best cock	75
J. R. Ross & Son, Level, O	Best cockerel	1 25
A. G. Oliver, Newark, Del	2d best cockerel	75
L. Rottman, Benton O	Best hen	1 25
J. R. Ross & Son, Level, O	2d best hen	75
Same	Best pullet	1 25
Same	2d best pullet	75
Golden Duck-Wing Bantam.		
L. Rottman, Benton, O	2d best cock	75
Same	Best cockerel	1 25
S. E. Wurst, Elyria, O	2d best cockerel	75
J. R. Ross & Son, Level, O	2d best hen	75
L. Rottman, Benton, O	Best pullet	1 25
Same	2d best pullet	75
Silver Duck-Wing Bantam.		
A. G. Oliver, Newark, Del	Best cock	1 25
Chas. Gammerdinger, Columbus, O	2d best cock	75
L. Rottman, Benton, O	Best cockerel	1 25
J. H. Cole, Berkshire, O	2d best cockerel	75
A. G. Oliver, Newark, Del	Best hen	1 25
J. F. Lutz, Amanda, O	2d best hen	75
L. Rottman, Benton, O	Best pullet	1 25
G. R. Baxter, Hillsdale, Mich	2d best pullet	75
Red Pile Bantam.		
A. G. Oliver, Newark, Del	Best cock	1 25
L. Rottman, Benton, O	2d best cock	75
Same	Best cockerel	1 25
A. G. Oliver, Newark, Del	2d best cockerel	75
L. Rottman, Benton, O	Best hen	1 25
Same	2d best hen	75
A. G. Oliver, Newark, Del	Best pullet	1 25
L. Rottman, Benton, O	2d best pullet	75

CLASS 10—BANTAM NOT GAME.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Golden Seabright Bantam.		
Thomas Corry, New Carlisle, O	Best cock	$1 25
J. R. Ross & Son, Level, O	2d best cock	75
L. Rottman, Benton, O	Best cockerel	1 25
A. G. Oliver Newark, Del	2d best cockerel	75
Fitch Bros., Prospect, O	Best hen	1 25
J. R. Vanatta, Mt. Gilead O	2d best hen	75
J. R. Ross & Son, Level, O	Best pullet	1 25
Thomas Corry, New Carlisle, O	2d best pullet	75
Chas. Gammerdinger Columbus, O	Best breeding pen	2 00
Lem McClead, Ashley, O	2d best breeding pen	1 00
Silver Seabright Bantam		
L. Rottman, Benton, O	Best cock	1 25
Clyde E Smith & Co., Ashley, O	2d best cock	75
L. Rottman, Benton, O	Best cockerel	1 25
Clyde E. Smith & Co., Ashley, O	2d best cockerel	75
L. Rottman, Benton, O	Best hen	1 25
J. R. Ross & Son, Level, O	2d best hen	75
Same	Best pullet	1 25
Clyde E. Smith & Co., Ashley, O	2d best pullet	75
L. Rottman, Benton, O	Best breeding pen	2 00
Chas. Gammerdinger, Columbus, O	2d best breeding pen	1 00
Buff Cochin Bantam.		
L. Rottman, Benton, O	Best cock	1 25
J R. Loss & Son, Level, O	2d best cock	75
L. Rottman, Benton, O	Best cockerel	1 25
Fritch Bros., Prospect, O	2d best cockerel	75
Same	Best hen	1 25
Same	2d best hen	75
Chas. Gammerdinger, Columbus, O	Best pullet	1 25
H. V. Shoemaker, Ashley, O	2d best pullet	75
Fritch Bros., Prospect, O	Best breeding pen	2 00
H. V Shoemaker, Ashley, O	2d best breeding pen	1 00
White and Black Cochin Bantam.		
J. R. Ross & Son, Level, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
J. R. Ross & Son, Level, O	Best cockerel	1 25
L. Rottman, Benton, O	2d best cockerel	75
Fritch Fros, Prospect, O	Best hen	1 25
Same	2d best hen	75
A. G. Oliver, Newark, Del	Best pullet	1 25
Same	2d best pullet	75
Black Rose Combed Bantam.		
J. R. Ross & Son, Level, O	Best cock	1 25
A. G. Oliver, Newark, Del	2d best cock	75
G. R. Baxter, Hillsdale, Mich	Best cockerel	1 25
Same	2d best cockerel	75
J. R. Vanatta, Mt. Gilead, O	Best hen	1 25
A. G. Oliver, Newark, Del	2d best hen	75
L. Rottman, Benton, O	Best pullet	1 25
Same	2d best pullet	75
Japanese Bantam.		
J. R. Ross & Son, Level, O	Best cock	1 25
L. Rottman, Benton, O	2d best cock	75
A. G. Oliver, Newark, Del	Best cockerel	1 25
L. Rottman, Benton, O	2d best cockerel	75
Same	Best hen	1 25
J. R. Ross & Son, Level, O	2d best hen	75
A. G Oliver, Newark Del	Best pullet	1 25
L. Rottman, Benton, O	2d best pullet	75

CLASS 11—TURKEYS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount
J. F. Lutz, Amanda O	Best bronze turkey, old pair	$2 00
S. E. Wurst, Elyria, O	2d best bronze turkey, old pair	1 00
J. F. Lutz, Amanda, O	2d best bronze turkey, young pair	1 00
J. R. Ross & Son, Level, O	Best white turkey, old pair	2 00
Thomas Corry, New Carlisle	2d best white turkey, old pair	1 00
J. F. Lutz, Amanda, O	Best white turkey, young pair	2 00
J. R Ross & Son; Level, O	Best buff turkey, old pair	2 00
Chas. Gammerdinger, Columbus, O	2d best buff turkey, old pair	1 00
M. M. Myers, New Dover, O	2d best buff turkey, young pair	1 00
J. F. Lutz Amanda, O	Best Narraganset turkey, old pair.	2 00
M. M. Myers, New Dover, O	2d best Narraganset turkey, old pair	1 00
Same	Best Narraganset turkey, young pair.	2 00
J. F. Lutz, Amanda. O	2d best Narraganset turkey, young pr.	1 00
M. M. Myers, New Dover. O	Best black turkey, old pair	2 00
J. R. Ross & Son, Level. O	2d best black turkey. old pair	1 00
M. M. Myers, New Dover, O	Best black turkey, young pair	2 00
J. R. Ross & Son, Level, O	Best slate turkey, old pair	2 00
J. F. Lutz, Amanda, O	2d best slate turkey, old pair	1 00

AQUATIC DIVISION.

CLASS 12—DUCKS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
H. H. Sibbett, Ripleyville, O	Best Pekin ducks, old pair	$ 2 00
J. R. Vanatta, Mt. Gilead, O	2d best Pekin ducks, old pair	1 00
Robert Bell, Ashley, O	Best Pekin ducks, young pair	2 00
Same	2d best Pekin ducks, youg pair.	1 00
M. M. Myers, New Dover, O	Best Aylesbury ducks, old pair	2 00
Chas. Gammerdinger, Columbus, O	2d best Aylesbury ducks, old pair	1 00
M. M. Myers, New Dover, O	Best Aylesbury ducks, young pair	2 00
J. H. Cole, Berkshire, O.	2d best Aylesbury ducks, young pair	1 00
M. M. Myers, New Dover O	Best Rouen ducks, old pair	2 00
Clyde E. Smith & Co., Ashley, O	2d best Rouen ducks, old pair	1 00
M. M. Myers, New Dover, O	Best Rouen ducks, young pair	2 00
Clyde E. Smith & Co., Ashley, O	2d best Rouen ducks, young pair	1 00
A. G. Oliver, Newark, Del	Best Cayuga ducks, old pair	2 00
Albert Nye, New Washington, O	2d best Cayuga ducks, old pair	1 00
Same	Best Cayuga ducks, young pair	2 00
M. M. Myers, New Dover, O	2d best Cayuga ducks, young pair	1 00
G. R. Baxter, Hillsdale Mich	Best Crested white ducks, old pair	2 00
J. H. Cole, Berkshire, O	2d best Crested white ducks, old pair	1 00
M. M. Myers, New Dover, O	Best Crested white ducks, young pair.	2 00
Same	Best Gray call, old pair.	1 00
G. R. Baxter, Hillsdale, Mich	2d best Gray call, old pair	2 00
M. M. Myers, New Dover, O	Best Gray call, young pair	1 00
J. R. Ross & Son Level, O	2d best Gray call, young pair	2 00
A. R. Oliver, Newark, Del	Best White call, old pair	1 00
G. R. Baxter, Hillsdale, Mich	2d best White call old pair	2 00
M. M. Myers, New Dover, O	Best White call, young pair	1 00
J. H Cole, Berkshire, O	2d best White call, young pair	2 00
A. G. Oliver, Newark, Del	Best Muscovey colored, old pair	1 00
M. M. Myers, New Dover, O	2d best Muscovey colored, old pair	2 00
J. F. Lutz, Amanda, O	Best Muscovey colored, young pair	1 00
M. M. Myers, New Dover, O	2d best Muscovey colored, young pair.	2 00
J. R. Ross & Son, Level, O	Best Muscovey white, old pair	1 00
A. G. Oliver, Newark, Del	2d best Muscovey white, old pair	2 00
J. R. Ross & Son, Level, O	Best Muscovey white, young pair	1 00
M. M. Myers, New Dover, O	2d best Muscovey white, young pair	2 00

Class 13—Geese.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
M. M. Myers, New Dover, O.	Best Toulouse geese, old pair	$2 00
Same	2d best Toulouse geese, old pair	1 00
J. F. Converse & Co., Woodville, N. Y.	Best Toulouse geese, young pair	2 00
J. F. Lutz, Amanda, O.	2d best Toulouse geese, young pair	1 00
M. M. Myers, New Dover, O.	Best Embden geese, old pair	2 00
G. R. Baxter, Hillsdale, Mich.	2d best Embden geese, old pair	1 00
J. F. Converse & Co., Woodville, N. Y.	Best Embden geese, young pair	2 00
M. M. Myers, New Dover, O.	2d best Embden geese, young pair	1 00
J. H. Cole, Berkshire, O.	Best African geese, old pair	2 00
Same	Best African geese young pair	2 00
J. F. Lutz, Amanda, O.	Best Brown Chinese, old pair	2 00
G. R. Baxter, Hillsdale, Mich.	2d best Brown Chinese, old pair	1 00
M. M. Myers, New Dover, O.	Best Brown Chinese, young pair	2 00
Chas. Gammerdinger, Columbus, O.	2d best Brown Chinese, young pair	1 00
A. G. Oliver, Newark, Del.	Best White, old pair	2 00
J. R. Ross & Son, Level, O.	2d best White, old pair	1 00
Albert Nye, New Washington, O.	Best White, young pair	2 00
M. M. Myers, New Dover, O.	2d best White, young pair	1 00
A. G. Oliver, Newark, Del.	Best Wild, old pair	2 00
F. Hartline, Strasburg O.	2d best Wild, old pair	1 00
J. F. Lutz, Amanda, O.	Best Wild, young pair	2 00
F. Hartline, Strasburg, O.	2d best Wild, young pair	1 00

Class 14—Ornamental.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
A. G. Oliver, Newark, Del.	Best pair Pea Fowls	$2 00
F. Hartline, Strasburg, O.	2d best pair Pea Fowls	1 00
A. G. Oliver, Newark, Del.	Best pair English Pheasants	2 00
Same	Best pair Silver Pheasants	2 00

Class Collections.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. Gammerdinger, Columbus, O.	Best collection in American class	$3 00
Same	Best collection in Asiatic class	3 00
Mrs. E. Gammerdinger, Columbus, O.	Best collection in Mediterranean class	3 00
A. G. Oliver, Newark, Del.	Best collection in Polish class	3 00
Chas. Gammerdinger, Columbus, O.	Best collection in Hamburg class	3 00
A. G. Oliver, Newark, Del.	Best collection in Games and Game Bantams	3 00
L. Rottman, Benton, O.	Best collection in Bantams, not game.	3 00
J. F. Lutz, Amanda, O.	Best collection of Turkeys	3 00
M. M. Myers, New Dover, O.	For finest collection of Geese	3 00
Same	For finest collection of Ducks	3 00
Invincible Incubator Co, Springfield, O.	Best incubator in operation	Medal
Same	Best brooder in operation	Medal

SIXTH DEPARTMENT.—ALBERT HALE, Member in Charge.

FARM PRODUCTS.

Owner's Name and Postoffice.	Name of Article.	Amount.
Grains, Seeds, Tobacco and Cereal Mill Products.		
H. Bookwalter, Hallsville, O	Best twenty-five pounds of buckwheat flour	$2 00
J. L. Keckley, Marysville, O	Best peck Democrat wheat	2 00
D. F. Corwin, Springboro, O	2d best peck Democrat wheat	1 00
F. M. Whipps, Byhalia, O	Best early white leader wheat	2 00
W. D. Whipps, Marion, O	2d best early white leader wheat	1 00
F. M. Whipps, Byhalia, O	Best peck Fulcaster wheat	2 00
W. D. Whipps, Marion, O	2d best peck Fulcaster wheat	1 00
F. M. Whipps, Byhalia, O	Best peck Fultz wheat	2 00
W. D. Whipps, Marion, O	2d best peck Fultz wheat	1 00
F M. Whipps, Byhalia, O	Best peck Golden Cross wheat	2 00
J. L. Keckley, Marysville, O	2d best peck Golden Cross wheat	1 00
W. D. Whipps, Marion, O	Best Jones winter fife wheat	2 00
F. M Whipps, Byhalia, O	2d best peck Jones winter fife wheat	1 00
J. L Keckley, Marysville, O	Best peck Mediterranean wheat	2 00
F. M. Whipps, Byhalia, O	2d best peck Mediterranean wheat	1 00
Albert Pearce, North Ridgeville, O	Best peck nigger wheat	2 00
W. D. Whipps, Marion, O	2d best peck nigger wheat	1 00
Same	Best peck Ontario wonder wheat	2 00
F. M. Whipps, Byhalia, O	2d best peck Ontario wonder wheat	1 00
Albert Pearce, North Ridgeville, O	Best peck Poole wheat	2 00
John Pearce, North Ridgeville, O	2d best peck Poole wheat	1 00
Same	Best peck rudy wheat	2 00
Albert Pearce, North Ridgeville, O	2d best peck rudy wheat	1 00
J. L. Keckley, Marysville, O	Best peck royal Australian wheat	2 00
W. D. Whipps, Marion, O	2d best peck royal Australian wheat	1 00
M. J. Leavitt, Mechanicsburg, O	Best peck valley wheat	2 00
D. F. Corwin Springboro, O	2d best peck valley wheat	1 00
W. D. Whipps, Marion, O	Best peck velvet chaff wheat	2 00
F. M. Whipps, Byhalia, O	2d best peck velvet chaff wheat	1 00
J. L. Keckley, Marysville, O	Best peck Wyandotte red wheat	2 00
F. M. Whipps, Byhalia, O	2d best peck Wyandotte red wheat	1 00
W. D. Whipps, Marion, O	Best peck black Norway oats	1 50
F. M. Whipps, Byhalia, O	2d best peck black Norway oats	75
I. B. Keckley, Marysville, O	Best peck black Tartarian oats	1 50
J. L. Keckley, Marysville, O	2d best peck black Tartarian oats	75
F. M. Whipps, Byhalia, O	Best peck Drogheda oats	1 50
J. L. Keckley, Marysville, O	2d best peck Drogheda oats	75
Same	Best peck improved American oats	1 50
M. J. Leavitt, Mechanicsburg, O	2d best peck improved American oats	75
J. L. Keckley, Marysville, O	Best peck race horse oats	1 50
Same	Best peck seizure oats	1 50
F. M. Whipps, Byhalia, O	2d best seizure oats	75
J. L. Keckley, Marysville, O	Best peck welcome oats	1 50
W. D. Whipps, Marion, O	2d best peck welcome oats	75
Albert Pearce, North Ridgeville, O	Best peck white wonder oats	1 50
H. Bookwalter, Hallsville, O	2d best peck white wonder oats	75
Albert Pearce, North Ridgeville, O	Best white California oats	1 50
M. J. Leavitt, Mechanicsburg, O	Best white superior Scotch oats	1 50
Albeyt Pearce, North Ridgeville, O	2d best white superior Scotch oats	75
J. L. Keckley, Marysville, O	Best peck of winter rye	2 00
F. M. Whipps, Byhalia, O	2d best peck of winter rye	1 00
Same	Best peck of winter barley	2 00
J L. Keckley, Marysville, O	2d best peck of winter barley	1 00
F M. Whipps, Byhalia, O	Best peck of spring barley	2 00
W. D. Whipps, Marion, O	2d best peck of spring barley	1 00
F. M. Whipps, Byhalia, O	Best peck of silver-hull buckwheat	2 00
J. L. Keckley, Marysville, O	2d best peck of silver-hull buckwheat	1 00
F M. Whipps, Byhalia, O	Best peck of Japanese buckwheat	2 00
W. D. Whipps, Marion, O	2d best peck of Japanese buckwheat	1 00
I. B. Keckley, Marysville, O	Best peck of Russian flax seed	2 00
J. L. Keckley, Marysville, O	2d best peck of Russian flax seed	1 00
Same	Best peck of common flax seed	2 00
L. M. Gregg, Springboro, O	2d best peck of common flax seed	1 00
F. M. Whipps, Byhalia, O	Best peck of timothy seed	2 00
J. L. Keckley, Marysville, O	2d best peck of timothy seed	1 00
D. F Corwin, Springboro, O	Best peck of Kentucky blue grass seed	2 00
W. D. Whipps, Marion, O	2d best peck of Kentucky blue grass seed	1 00
D. F. Corwin, Springboro, O	Best peck of mammoth clover seed	2 00
M J. Leavitt, Mechanicsburg, O	2d best peck of mammoth clover seed	1 00
L. M Gregg, Springboro, O	Best peck of common clover seed	2 00
D. F. Corwin, Springboro, O	2d best peck of common clover seed	1 00
W. D. Whipps, Marion, O	Best peck of Alsyke clover seed	2 00
F. M. Whipps, Byhalia, O	2d best peck of Alsyke clover seed	1 00
Same	Best peck of crimson clover seed	2 00
W. D. Whipps, Marion O	2d best peck of crimson clover seed	1 00
J. L. Keckley, Marysville, O	Best peck of orchard grass seed	2 00
W D. Whipps, Marion, O	2d best peck of orchard grass seed	1 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Grain, Seeds, Tobacco and Cereal Mill Products—Continued.		
F. M. Whipps, Byhalia, O.	Best peck of millet seed	$2 00
D. F. Corwin, Springboro, O.	2d best peck of millet seed	1 00
Albert Pearce, North Ridgeville, O.	Best peck of Hungarian grass seed	2 00
D. F. Corwin, Springboro, O.	2d best peck of Hungarian grass seed	1 00
Same	Best display of grain in straw and threshed; of threshed not less than one-half peck of each variety, all properly named and label'd	5 00
F. M. Whipps, Byhalia, O.	2d best display of grain in straw and threshed; of threshed not less than one-half peck of each variety, all properly named and label'd	3 00
L. M. Gregg, Springboro, O.	Best display of grasses and sedges	3 00
D. F. Corwin, Springboro, O.	2d best display of grasses and sedges	2 00
Shelled Beans to be Shown in Glass Jars.		
Albert Pearce, North Ridgeville, O.	Best two quarts of Lima beans	1 00
M. J. Leavitt, Mechanicsburg, O.	2d best two quarts of Lima beans	50
Albert Pearce, North Ridgeville, O.	Best two quarts of marrowfat beans	1 00
Powell & Kent, Newark, O.	2d best two quarts of marrowfat beans	50
J. L. Keckly, Marysville, O.	Best two quarts of navy beans	1 00
Albert Pearce, North Ridgeville, O.	2d best two quarts of navy beans	50
J. L. Keckley, Marysville, O.	Best two quarts of golden wax beans	1 00
Albert Pearce, North Ridgeville, O.	2d best two quarts of golden wax beans	50
D. F. Corwin, Springboro, O.	Best two quarts of kidney beans	1 00
J. L. Keckley, Marysville, O.	2d best two quarts of kidney beans	50
Albert Pearce, North Ridgeville, O.	Best one-half peck, marrowfat field peas	2 00
J. L. Keckley, Marysville, O.	2d best one-half peck, marrowfat field peas	1 00
W. D. Whipps, Marion, O.	Best one-half peck, Canada field peas	2 00
J. L. Keckley, Marysville, O.	2d best one-half peck, Canada field peas	1 00
Tobacco.		
L. M. Gregg, Springboro, O.	Best four hands Ohio seed leaf	3 00
D. F. Corwin, Springboro, O.	2d best four hands Ohio seed leaf	1 00
Same	Best four hands white burley	3 00
L. M. Gregg, Springboro, O.	2d best four hands white burley	1 00
Same	Best four hands Little Dutch	3 00
D. F. Corwin, Springboro O.	2d best four hands Little Dutch	1 00
L. M. Gregg, Springboro, O.	Best four hands Zimmer's Spanish	3 00
D. F. Corwin, Springboro, O.	2d best four hands Zimmer's Spanish	1 00
Corn, etc.		
J. L. Keckley, Marysville, O.	Best display of yellow field corn, not less than twenty-five varieties, nor less than ten ears of each variety, properly named and labeled	5 00
D. F Corwin, Springboro, O.	2d best display of yellow field corn not less than twenty-five varieties nor less than ten ears of each variety, properly named and labeled	3 00
Same	Best display of white field corn, not less than twenty-five varieties, nor less than ten ears of each variety, properly named and labeled	5 00
F. M. Whipps, Byhalia, O.	2d best display of white field corn, not less than twenty-five varieties, nor less than ten ears of each variety, properly named and labeled	3 00
Same	Best display of sweet corn, not less than fifteen varieties, nor less than ten ears of each variety, properly named and labeled.	3 00
Same	Best display of pop corn, not less than ten varieties, one-half peck of each variety, properly named and labeled	3 00
J. L. Keckley, Marysville, O.	2d best display of pop corn, not less than ten varieties, one-half peck of each variety, properly named and labeled	2 00
D. F. Corwin, Springboro, O.	Best display in variety, of corn of all kinds, not less than ten ears of each variety, properly named and labeled	10 00
J L. Keckley, Marysville, O.	2d best display in variety, of corn of all kinds, not less than ten ears of each variety, properly named and labeled	5 00
D. F. Corwin, Springboro, O.	Best six stalks of corn, two ears on the stalk	2 00
F. M Whipps, Byhalia, O.	2d best six stalks of corn, two ears on th stalk	1 00
E. S. Tussing, Canal Winchester, O.	Best six stalks of sweet corn	2 00
Powell & Kent, Newark, O.	2d best six stalks of sweet corn	1 00
D. F. Corwin, Springboro, O.	Best six stalks of broom corn	2 00
Powell & Kent, Newark, O.	2d best six stalks of broom corn	1 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice	Name of Article.	Amount.
Corn, etc.—Concluded.		
Powell & Kent, Newark, O	Best six stalks ensilage corn	$2 00
E. S. Tussing, Canal Winchester, O	Best six stalks pop corn, four ears on the stalk	2 00
D. F. Corwin, Springboro, O	Best display of corn on the stalk	5 00
J. L Keckley, Marysville, O	2d best display of corn on the stalk	3 00
M. J. Leavitt, Mechanicsburg, O	Best specimen of dried corn, not less than one peck	2 00
F. M. Whipps, Byhalia, O	Best twenty pounds broom corn	2 00
H. Bookwalter, Hallsville, O	2d best twenty pounds broom corn	1 00
Cheese and Butter.		
Isaly Bros., Columbus, O	Best display of not less than twenty cheeses.	10 00
Peter Ammon, Ripon, Wis	2d best display of not less than twenty cheeses	5 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	Best package of dairy butter	5 00
Mrs. A. W. Graham, Reynoldsburg, O	Best exhibition of dairy butter, quality and quantity considered	8 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best exhibition of dairy butter, quality and quantity considered	5 00
Mrs. A. W. Graham, Reynoldsburg, O	Best exhibition of creamery butter, quality and quantity considered	8 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best exhibition of creamery butter, quality and quantity considered	5 00
Potatoes and other Root Products.		
W. D. Whipps, Marion, O	Best peck American Giant	1 50
J. L. Keckley, Marysville, O	2d best peck American Giant	1 00
Same	Best peck American Wonder	1 50
W. D. Whipps, Marion, O	2d best peck American Wonder	1 00
J. L. Keckley, Marysville, O	Best peck Alexander, prolific	1 50
Powell & Kent, Newark, O	2d best peck Alexander, prolific	1 00
J. L. Keckley, Marysville, O	Best peck Beauty of Hebron	1 50
W. D. Whipps, Marion, O	2d best peck Beauty of Hebron	1 00
Powell & Kent, Newark, O	Best peck Burbank Seedling	1 50
W. D. Whipps, Marion, O	2d best peck Burbank Seedling	1 00
Powell & Kent, Newark, O	Best peck Brownell's Best	1 50
J. L. Keckley, Marysville, O	2d best peck Brownell's Best	1 00
Same	Best peck Banner	1 50
Powell & Kent, Newark, O	2d best peck Banner	1 00
J. L. Keckley, Marysville, O	Best peck Bliss Triumph	1 50
Powell & Kent, Newark, O	2d best peck Bliss Triumph	1 00
Same	Best peck Clark's No. 1	1 50
F. M. Whipps, Byhalia, O	2d pest peck Clark's No. 1	1 00
J. L. Keckley, Marysville, O	Best peck Carman No. 3	1 50
Powell & Kent, Newark, O	2d best peck Carman No. 3	1 00
J. L. Keckley, Marysville, O	Best peck Chicago Market	1 50
Powell & Kent, Newark, O	2d best peck Chicago Market	1 00
Same	Best peck Dunmore Seedling	1 50
J. L. Keckley, Marysville, O	2d best peck Dunmore Seedling	1 00
Powell & Kent, Newark, O	Best peck Early Rose	1 50
M. J. Leavitt, Mechanicsburg, O	2d best peck Early Rose	1 00
L. M. Gregg, Springboro, O	Best peck Early Ohio	1 50
W. D. Whipps, Marion, O	2d best peck Early Ohio	1 00
J. L. Keckley, Marysville, O	Best peck Early Puritan	1 50
Powell & Kent, Newark, O	2d best peck Early Puritan	1 00
J. L. Keckley, Marysville, O	Best peck Early Mayflower	1 50
W. D. Whipps, Marion, O	2d best peck Early Mayflower	1 00
Same	Best peck Empire State	1 50
J. L. Keckley, Marysville, O	2d best peck Empire State	1 00
Same	Best peck Freeman	1 50
Powell & Kent, Newark, O	2d best peck Freeman	1 00
Same	Best peck Jumbo	1 50
J. L. Keckley, Marysville, O	2d best peck Jumbo	1 00
W. D Whipps, Marion, O	Best peck Green Mountain	1 50
Powell & Kent, Newark, O	2d best peck Green Mountain	1 00
J. L. Keckley, Marysville, O	Best peck Late Rose	1 50
W. D. Whipps, Marion, O	2d best peck Late Rose	1 00
J. L. Keckley, Marysville, O	Best peck Lee's Favorite	1 50
F. M. Whipps, Byhalia, O	Best peck Monroe Seedling	1 50
Albert Pearce, North Ridgeville, O	2d best peck Monroe Seedling	1 00
Same	Best peck Potentate	1 50
Powell & Kent, Newark, O	2d best peck Potentate	1 00
Albert Pearce, North Ridgeville, O	Best peck Polaris	1 50
F. M. Whipps. Byhalia, O	2d best peck Polaris	1 00
Same	Best peck Puritan	1 50
J. L. Keckley, Marysville, O	2d best peck Puritan	1 00

FARM PRODUCTS—Continued.

Owners Name and Postoffice.	Name of Article.	Amount.
Potatoes and other Root Products—Concluded		
J. L. Keckley, Marysville, O.	Best peck Queen of the Valley	1 50
E. G. Stockman, Prospect, O.	2d best peck Queen of the Valley	1 00
J. L, Keckley, Marysville, O.	Best peck Rural New Yorker, No. 2	1 50
Powell and Kent, Newark, O.	2d best peck Rural New Yorker, No. 2	1 00
J. L. Keckley, Marysville, O.	Best peck Seneca Beauty	1 50
W. D. Whipps, Marion, O.	2d best peck Seneca Beauty	1 00
J. L. Keckley, Marysville, O.	Best peck Sir William	1 50
Albert Pearce, North Ridgeville, O.	2d best peck Sir William	1 00
J. L. Keckley, Marysville O.	Best peck Summit	1 50
Powell and Kent, Newark, O.	2d best peck Summit	1 00
Albert Pearce, North Ridgefield, O.	Best peck State of Maine	1 50
J. L. Keckley, Marysville, O.	Best peck Vaughn	1 50
Powell and Kent, Newark, O.	Best peck White Elephant	1 50
E. G. Stockman, Prospect, O.	2d best peck White Elephant	1 00
J. L. Keckley, Marysville, O.	Best peck White Star	1 50
Powell and Kent, Newark, O.	2d best peck White Star	1 00
Same	Best peck new variety introduced and exhibited for the first time in 1897, to be properly named and labeled	3 00
Albert Pearce, North Ridgeville, O.	2d best peck new variety introduced and exhibited for the first time in 1897, to be properly named and labeled	2 00
J. L. Keckley. Marysville, O.	Best display of seedling potatoes, grown from seed this current year, not less than five varieties of one peck each, properly labeled and pedigreed	3 00
Powell and Kent, Newark, O.	Best display and variety of Irish potatoes, one peck of each, named and labeled	10 00
E. G. Stockman, Prospect, O.	2d best display and variety of Irish potatoes, one peck of each, named and labeled	6 00
W. D. Whipps, Marion, O.	Best peck of yellow sweet potatoes	1 50
E. S. Tussing, Canal Winchester, O.	2d best peck of yellow sweet potatoes	1 00
Powell and Kent Newark O.	Best peck of red sweet potatoes	1 50
E. S. Tussing, Canal Winchester, O.	Best peck of red yams	1 50
Same	Best peck of white yams	1 50
Same	Best display and variety of sweet potatoes and yams, one peck each variety, properly named and labeled	5 00
Powell and Kent, Newark, O.	2d best display and variety of sweet potatoes and yams, one peck each variety, properly named and labeled	3 00
E. S. Tussing, Canal Winchester, O.	Best 12 parsnips	2 00
Albert Pearce, North Ridgeville, O.	2d best 12 parsnips	1 00
Same	Best 12 Danvers carrots	2 00
John Pearce, North Ridgeville, O.	2d best 12 Danvers carrots	1 00
E. S. Tussing, Canal Winchester, O.	Best 12 long orange carrots	2 00
Albert Pearce, North Ridgeville, O.	2d best 12 long orange carrots	1 00
Same	Best 12 stump rooted carrots	2 00
Powell and Kent, Newark, O.	2d best 12 stump rooted carrots	1 00
E. S. Tussing, Canal Winchester, O.	Best display of carrots, not less than six varieties of six each, named and labeled	3 00
Powell and Kent, Newark, O.	2d best display of carrots, not less than six varieties of six each, named and labeled	2 00
Albert Pearce, North Ridgevlle, O.	Best 12 roots salsify	2 00
W. D. Whipps, Marion, O.	2d best 12 roots salsify	1 00
E. S. Tussing, Canal Winchester, O.	Best 6 eclipse beets for table use	1 50
Powell and Kent, Newark, O.	2d best 6 eclipse beets for table use	75
Albert Pearce, North Ridgeville, O.	Best 6 extra large bassino beets for table use.	1 50
Powell and Kent, Newark, O.	Best 6 early blood turnip beets for table use.	1 50
E. S. Tussing, Canal Winchester, O.	2d best 6 early blood turnip beets for table use.	75
Same	Best 6 long red mangel wurzels	1 50
F. M. Whipps, Byhalia, O.	2d best 6 long red mangel wurzels	75
Powell and Kent, Newark, O.	Best 6 kohlrabi	1 50
Albert Pearce, North Ridgeville, O.	2d best 6 kohlrabi	75
W. D. Whipps, Marion, O.	Best 6 yellow mangel wurzels	1 50
E. S. Tussing, Canal Winchester, O.	2d best 6 yellow mangel wurzels	75
Same	Best 6 golden tankard mangel wurzels	1 50
W. D. Whipps, Marion, O.	2d best 6 golden tankard mangel wurzels	75
E. S. Tussing, Canal Winchester, O.	Best display and variety of beets for table use and for stock, not less than three of each variety	5 00
Powell and Kent, Newark, O.	2d best display and variety of beets for table use and for stock, not less than three of each variety	3 00
Albert Pearce, North Ridgeville, O.	Best 6 rutabagas	1 50
Powell and Kent, Newark, O.	2d best 6 rutabagas	75
Same	Best peck purple top turnips	1 50
E. S. Tussing, Canal Winchester, O.	2d best peck purple top turnips	75

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount
Potatoes and other Root Products—Concl'.		
Powell & Kent, Newark, O	Best peck white top turnips	$1 50
W. D. Whipps Marion, O	Best peck red Weatherfield onions	1 50
J. L. Keckley, Marysville, O	2d best peck red Weatherfield onions	75
W. D. Whipps, Marion, O	Best peck red Globe onions	1 50
J. L. Keckley, Marysville, O	2d best peck red Globe onions	75
Same	Best peck yellow Danvers onions	1 50
Powell & Kent, Newark, O	2d best peck yellow Danvers onions	75
W. D. Whipps, Marion, O	Best peck yellow Globe onions	1 50
J. L. Keckley, Marysville, O	2d best peck yellow Globe onions	75
W. D. Whipps Marion, O	Best peck white Globe onions	1 50
M. J. Leavitt, Mechanicsburg, O	2d best peck white Globe onions	75
E. S. Tussing, Canal Winchester, O	Best peck Giant Rocca onions	1 50
Powell & Kent, Newark O	2d best peck Giant Rocca onions	75
E. S. Tussing, Canal Winchester, O	Best peck potato onions	1 50
J. L. Keckley, Marysville, O	2d best peck potato onions	75
Powell & Kent, Newark, O	Best peck prize-taker onions	1 50
J. L. Keckley, Marysville, O	2d best peck prize-taker onions	75
F. M. Whipps, Byhalia, O	Best display and variety of onions, one peck of each, correctly named and labeled.	5 00
Powell & Kent, Newark, O	2d best display and variety of onions, one peck of each, correctly named and labeled.	3 00
Vegetables.		
E. S. Tussing, Canal Winchester, O	Best peck Acme tomatoes	1 50
Powell & Kent, Newark, O	2d best peck Acme tomatoes	75
E S. Tussing, Canal Winchester, O	Best peck Atlantic Prize	1 50
Powell & Kent, Newark, O	2d best peck Atlantic Prize	75
E S. Tussing, Canal Winchester, O	Best peck Buckeye State	1 50
Powell & Kent, Newark, O	2d best peck Buckeye State	75
Same	Best peck Cumberland Red	1 50
Albert Pearce, North Ridgeville, O	Best peck Dwarf Champions	1 50
Powell & Kent, Newark, O	2d best peck Dwarf Champions	75
Albert Pearce, North Ridgeville, O	Best peck Favorite	1 50
Powell & Kent, Newark, O	2d best peck Favorite	75
E. S. Tussing, Canal Winchester, O	Best peck Golden Queen	1 50
Powell & Kent, Newark, O	2d best peck Golden Queen	75
E. S. Tussing, Canal Winchester, O	Best peck Ignotum	1 50
Powell & Kent, Newark, O	2d best peck Ignotum	75
E S. Tussing, Canal Winchester, O	Best peck Livingston's Beauty	1 50
Powell & Kent, Newark, O	2d best peck Livingston's Beauty	75
Same	Best peck Perfection	1 50
E. S. Tussing, Canal Winchester, O	2d best peck Perfection	75
Same	Best peck Ponderosa	1 50
Powell & Kent, Newark, O	2d best peck Ponderosa	75
Same	Best peck The Stone	1 50
E. S. Tussing, Canal Winchester, O	2d best peck The Stone	75
Powell & Kent, Newark, O	Best display of tomatoes, not less than six varieties, nor less than one-half peck of each variety	4 00
E. S. Tussing, Canal Winchester, O	2d best display of tomatoes, not less than six varieties, nor less than one-half peck of each variety	2 00
Same	Best four heads All Seasons cabbage	1 50
Powell & Kent, Newark, O	2d best four heads All Seasons cabbage	75
Albert Pearce, North Ridgeville, O	Best four heads Dutch Winter	1 50
Powell & Kent, Newark, O	2d best four heads Dutch Winter	75
Same	Best four heads Early Jersey Wakefield	1 50
E. S. Tussing, Canal Winchester, O	2d best four heads Early Jersey Wakefield	75
Same	Best four heads Flat Dutch	1 50
Powell & Kent, Newark, O	2d best four heads Flat Dutch	75
E. S. Tussing, Canal Winchester, O	Best four heads Fottler's Improved	1 50
W. D. Whipps, Marion, O	2d best four heads Fottler's Improved	75
Same	Best four heads Large Wakefield	1 50
Powell & Kent, Newark, O	Best four heads Marblehead Drumhead	1 50
Albert Pearce, North Ridgeville, O	2d best four heads Marblehead Drumhead	75
Same	Best four heads Sure Head	1 50
Powell & Kent, Newark, O	2d best four heads Sure Head	75
Same	Best four heads Winningstadt	1 50
E. S. Tussing, Canal Winchester, O	2d best four heads Winningstadt	75
Same	Heaviest head of cabbage	1 50
E. Jacobs, Columbus, O	2d heaviest head of cabbage	75
W. D. Whipps, Marion, O	Best four heads Lenormand's Short Stem cauliflower	1 50
Powell & Kent, Newark, O	2d best four heads Lenormand's Short Stem cauliflower	75
J. L. Keckley, Marysville, O	Best four heads Early Snowball cauliflower	1 50
E. S. Tussing, Canal Winchester, O	2d best four heads Early Snowball cauliflow'r	75
Powell & Kent, Newark, O	Best four heads Early Paris cauliflower	1 50

FARM PRODUCT—Continued.

Owner's Name and Postoffice.	Name of Articles.	Amount.
Vegetables—Concluded.		
E. S. Tussing, Canal Winchester, O	Best four heads any other variety cauliflower	$1 50
Same	Best display of celery, six stalks of each variety	2 00
Powell & Kent, Newark, O	2d best display of celery, six stalks of each variety	1 00
Same	Best display of pepers, not less than six varieties	2 00
E. S. Tussing, Canal Winchester, O	2d best display of peppers, not less than six varieties	1 00
Same	Best three Boston Marrow squashes	1 50
D. F. Corwin, Springboro, O	2d best three Boston Marrow squashes	75
Powell & Kent, Newark, O	Best Brazil Sugar squashes	1 50
E. S. Tussing, Canal Winchester, O	Best three Essex Hybrid squashes	1 50
Same	Best three Ford Hook squashes	1 50
Powell & Kent, Newark, O	2d best three Ford Hook squashes	75
E. S. Tussing, Canal Winchester, O	Best three Giant Yellow Crookneck squashes	1 50
W. D. Whipps, Marion, O	2d best three Giant Yellow Crookneck squashes	75
Powell & Kent, Newark, O	Best three Hubbard squashes	1 50
E. S. Tussing, Canal Winchester, O	Best three Perfect Gem squashes	1 50
Powell and Kent, Newark, O	2d best three Perfect Gem squashes	75
Same	Best White Chestnut squashes	1 50
E. S. Tussing, Canal Winchester, O	Best display of squashes, 3 of each variety	4 00
Powell & Kent, Newark, O	2d best display of squashes, 3 of each variety	2 00
E. S. Tussing, Canal Winchester, O	Heaviest squash	1 50
Powell & Kent Newark, O	2d heaviest squash	75
F. M. Whipps, Byhalia, O	Best three common pumpkins	1 50
E. S. Tussing, Canal Winchester, O	2d best three common pumpkins	75
Same	Best three sweet pumpkins	1 50
Powell & Kent, Newark, O	2d best three sweet pumpkins	75
E. S. Tussing, Canal Winchester, O	Largest pumpkin	1 50
Powell & Kent, Newark, O	2d largest pumpkin	75
E. S. Tussing, Canal Winchester, O.	Best display of pumpkins	2 00
Powell & Kent, Newark, O	2d best display of pumpkins	1 00
Same	Best three Cuban Queen watermelons	1 50
E. S. Tussing. Canal Winchester, O	Best three Ice Cream watermelons	50
Powell & Kent, Newark, O	2d best three Ice Cream watermelons	75
E. S. Tussing, Canal Winchester, O	Best three Kolb Gem watermelons	1 50
Same	Best three Florida Favorite watermelons	75
F. M. Whipps, Byhalia, O	2d best three Florida Favorite watermelons	1 50
E. S. Tussing, Canal Winchester, O	Best three Phiney's Early watermelons	1 50
Powell & Kent, Newark, O	2d best three Phiney's Early watermelons	75
Same	Best three Peerless watermelons	1 50
E. S. Tussing, Canal Winchester, O	2d best three Peerless watermelons	75
Same	Best three Sweet Heart watermelons	1 50
Powell & Kent, Newark, O	2d best three Sweet Heart watermelons	75
F. M. Whipps, Byhalia, O	Best three any other variety watermelons	1 50
E. S. Tussing, Canal Winchester, O	2d best three any other variety watermelons	75
Powell & Kent, Newark, O	Heaviest watermelon	1 50
E. S. Tussing, Canal Winchester, O	2d heaviest watermelon	75
Same	Best display of watermelons, three of each variety	4 00
Powell & Kent, Newark, O	2d best display of watermelons, three of each variety	2 00
Same	Best display of muskmelons	4 00
E. S. Tussing, Canal Winchester, O	2d best display of muskmelons	2 00
Same	Best display and variety of cucumbers, full grown and in pickle shape	2 00
Powell & Kent, Newark, O	2d best display and variety of cucumbers, full grown and in pickle shape	1 00
E. S. Tussing, Canal Winchester, O	Best three purple egg plants	2 00
J. L. Keckley, Marysville, O	2d best three purple egg plants	1 00
Powell & Kent, Newark, O	Best twelve ears of early sweet corn, green.	1 50
E. S. Tussing, Canal Winchester, O	2d best twelve ears of early sweet corn, green	75
Same	Best twelve ears of late sweet corn, green	1 50
Powell & Kent, Newark, O	2d best twelve ears of late sweet corn, green	75
E. S. Tussing, Canal Winchester, O	Best display and variety of vegetables, to include articles named in books 59 and 60 and to be made up of specimens other than those entered in	20 00
Powell & Kent, Newark, O	2d best display and variety of vegetables, to include articles named in books 59 and 60 and to be made up of specimens other than those entered in	10 00
County Exhibit of Farm Products.		
J. L. Keckley, Marysville, O	Best rep. county exhibit of farm product	75 00
D. F. Corwin, Springboro, O	2d best rep. county exhibit of farm products.	50 00
W. D. Whipps, Marion, O	3d best rep. county exhibit of farm products.	35 00
Powell & Kent, Newark, O	4th best rep. county exhibit of farm products	25 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
To the above the Armour Fertilizer Works of Chicago, Ill., added $100.00 as follows:		
J. L. Keckley, Marysville, O	To county exhibit receiving first award	$50 00
D. F. Corwin, Springboro, O	To county exhibit receiving second award	30 00
W. D, Whipps, Marion, O	To county exhibit receiving third award	20 00
Bees and Honey.		
E. R. Magoon, New England, O	Best display of comb-honey, appearance. quality and shape for market to govern	10 00
J. C. Boynton, Delaware, O	2d best display of comb-honey, appearance, quality and shape for market to govern	5 00
E. R. Magoon, New England, O	Best case of twenty-four sections white clover comb-honey, general appearance, filling and capping to govern	3 00
George M. Case, Lewis Center, O	2d best case of twenty-four sections white clover comb-honey, general appearance. filling and capping to govern	2 00
J. C. Boynton, Delaware, O	Best case of twenty-four sections bass-wood comb-honey	3 00
George M. Case, Lewis Center, O	2d best case of twenty-four sections basswood comb honey	2 00
E. R. Magoon, New England, O	Best case of twenty-four sections comb-honey from fall flowers	3 00
J. C. Boynton, Delaware, O	2d best case of twenty-four sections comb-honey from fall flowers	2 00
E. R. Magoon, New England, O	Best twelve pounds of extracted honey, in best shape for the retail dealer	3 00
George M. Case, Lewis Center, O	2d best twelve pounds of extracted honey, in best shape for the retail dealer	2 00
Same	Best display of extracted honey, quantity, quality, and arrangement to govern	10 00
E. R. Magoon, New England, O	2d best display of extracted honey, quantity, quality and arrangement to govern	5 00
J. C. Boynton, Delaware, O	Best display of candied honey, not less than 25 pounds	5 00
George M. Case, Lewis Center. O	2d best display of candied honey, not less than 25 pounds	3 00
J. C. Boynton, Delaware, O	Best display of beeswax	2 00
George M. Case, Lewis Center, O	2d best display of beeswax	1 00
M. J Leavitt, Mechanicsburg, O	Best nucleus of Italian bees in observatory hive	3 00
W. T. Easton, Watkins, O	2d best nucleus of Italian bees in observatory hive	2 00
Same	Best nucleus of Carniolan bees in observatory hive	3 00
J. C. Boynton, Delaware, O	Best display of comb foundation	2 00
George M. Case, Lewis Center, O	2d best display of comb foundation	1 00
E. R. Magoon, New England, O	Largest and finest display of honey, comb and extracted	15 00
George M. Case, Lewis Center, O	2d largest and finest display of honey—comb and extracted	8 00
Maple Products.		
A. R. Phillips, Chagrin, Falls, O	2d best gallon of maple syrup, to be shown in glass	2 00
Same	Best three bricks of maple sugar	3 00
Same	Best five pounds grained maple sugar	3 00

HORTICULTURAL PRODUCTS.

ALBERT HALE, Member in charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
Summer and Fall Apples		
W. W. Farnsworth, Waterville, O	Best 6 varieties for family use	$4 00
G. N. Toops, Chillicothe, O	2d best 6 varieties for family use	2 00
W. W. Farnsworth, Waterville, O	Best 3 varieties for family use	3 00
J. C. Vergon, Delaware, O	2d best 3 varieties for family use	1 50
J. R. Vance, Ashville, O	Best 3 varieties of large—size and beauty to rule	3 00
T. S. Johnson, Gypsum, O	2d best 3 varieties of large—size and beauty to rule	1 50
C. W. Counter, Toledo, O	Best 3 varieties for market—profit to rule	3 00
F. A. Brown, Chillicothe, O	2d best 3 varieties for market—profit to rule	1 50
G. N. Toops, Chillicothe O	Best approved new variety	1 50
C. W. Counter, Toledo, O	Best variety of summer desert—quality to rule	2 00
H. Bookwalter, Hallsville, O	2d best variety of summer desert—quality to rule	1 00
J. R. Vance, Nashville, O	Best variety of fall desert—quality to rule	2 00
W. W. Farnsworth, Waterville, O	2d best variety of fall desert—quality to rule.	1 00
E. G. Stockman, Prospect, O	Best display of ten varieties—quality to rule.	6 00
W. W. Farnsworth, Waterville, O	2d best display of ten varieties—quality to rule	3 00
Winter Apples.		
F. A. Brown, Chillicothe, O	Best 12 varieties for family use	8 00
S. J. & S. R. Moore, Zanesville, O.	2d best 12 varieties for family use	4 00
J. R. Vance, Nashville, O	Best 6 varieties for family use	4 00
T. S. Johnson, Gypsum, O	2d best 6 varieties for family use	2 00
F. A. Brown, Chillicothe, O	Best 6 plates of large—size and beauty to rule	4 00
Hurst & Hurst, Chilicothe, O	2d best 6 plates of large—size and beauty to rule	2 00
C. W. Counter, Toledo, O	Best variety of desert—quality to rule	2 00
S. J. & S. R. Moore, Zanesville, O	2d best variety of desert—quality to rule	1 00
M. I. Shively, Frankfort, O	Best approved new variety, produced in Ohio	2 00
F. A. Brown, Chillicothe, O	2d best approved new var'ty, produced in Ohio	1 00
M. I. Shively, Frankfort, O	Best 6 varieties for market—profit to rule	4 00
S. J. & S. R. Moore, Zanesville, O	2d best 6 varieties for market—profit to rule	2 00
W. W. Farnsworth, Waterville, O	Best display of 25 varieties—beauty and quality to rule	10 00
E. G. Stockman, Prospect, O	2d best display of 25 varieties—beauty and quality to rule	5 00
Plate Apples-Summer and Fall.		
E. G. Stockman, Prospect, O	Best Alexander	1 50
W. W. Farnsworth, Waterville, O	2d best Alexander	75
S. J. & S. R. Moore, Zanesville, O	Best Am. Summer Pearmain	1 50
H. Bookwalter, Harrison, O	Best Benoni	1 50
D. F. Corwin, Springboro, O	2d best Benoni	75
E. G. Stockman, Prospect, O	Best Beauty of Kent	1 50
Same	Best Cayuga Red Streak	1 50
Frank A. Brown, Chillicothe, O	2d best Cayuga Red Streak	75
J. R. Vance, Nashville, O	Best Chenango Strawberry	1 50
G. N. Toops, Chillicothe, O	2d best Chenango Strawberry	75
W. W Farnsworth, Waterville, O	Best Duchess of Oldenberg	1 50
T. S. Johnson, Gypsum, O	2d best Duchess of Oldenberg	75
Same	Best Fall Pippin	1 50
Frank A. Brown, Chillicothe, O	2d best Fall Pippin	75
M. I. Shively, Frankfort, O	Best Fall Wine	1 50
C. V. Kuhn, Chillicothe, O	2d best Fall Wine	75
J. R. Vance, Nashville, O	Best Gravenstein	1 50
W. H. West, Chillicothe, O	2d best Gravenstein	75
E. G. Stockman, Prospect, O	2d best Gideon	1 50
S. J. & S. R. Moore, Zanesville, O	Best Jefferis	1 50
Hurst & Hurst, Chillicothe, O	Best Lowell	1 50
F. A. Brown, Chillicothe, O	2d best Lowell	75
E. G. Stockman, Prospect, O	Best Maiden's Blush	1 50
J. R. Vance, Nashville, O	2d best Maiden's Blush	75
W. W. Farnsworth, Waterville, O	Best Ohio Nonpareil	1 50
J. R. Vance, Nashville, O	2d best Ohio Nonpareil	75
E. G Stockman, Prospect, O	Best Porter	1 50
W. H. West, Chillicothe, O	2d best Porter	75
D. V. Kuhn, Chillicothe, O	Best Red Astrachan	1 50
J. R. Vance, Nashville, O	2d best Red Astrachan	75
Same	Best Summer Queen	1 50
G. N. Toops, Chillicothe, O	2d best Summer Queen	75
W. W. Farnsworth, Waterville, O	Best Sweet Bough	1 50
C. W. Counter, Toledo, O	2d best Sweet Bough	75
J. R. Vance, Nashville, O	Best Sweet Russett	1 50
E. G. Stockman, Prospect, O	2d best Sweet Russett	75
Same	Best St. Lawrence	1 50
J. R Vance, Nashville, O	2d best St. Lawrence	75

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Plate Apples, Summer and Fall—Concluded.		
W. W. Farnsworth, Waterville, O	Best Wealthy	$1 50
E. G. Cox, Bradrick, O	2d best Wealthy	75
Hurst & Hurst, Chillicothe, O	Best Western Beauty	1 50
F. A. Brown, Chillicothe, O	2d best Western Beauty	75
W. W. Farnsworth, Waterville, O	Best Yellow Transparent	1 50
C. W. Counter, Toledo, O	2d best Yellow Transparent	75
Plate Apples—Winter.		
D. V. Kuhn, Chillicothe, O	Best Am. Golden Russett	1 50
H. Bookwalter, Hallsville, O	2d best Am. Golden Russett	75
M. J. Frankfort, Frankfort, O	Best Baldwin	1 50
H. Bookwalter, Hallsville, O	2d best Baldwin	75
T. S. Johnson, Gypsum, O	Best Baltimore	1 50
S. J. & S. R. Moore, Zanesville, O	2d best Baltimore	75
W. H. West, Chillicothe, O	Best Bailey's Sweet	1 50
E. G. Stockman, Prospect, O	2d best Bailey's Sweet	75
T. S. Johnson, Gypsum, O	Best Belleflower Yellow	1 50
G. N. Toops, Chillicothe, O	2d best Belleflower Yellow	75
J. R. Vance, Nashville, O	Best Bellmont	1 50
E. G. Stockman, Prospect, O	2d best Belmont	75
E. G. Cox, Bradrick, O	Best Ben Davis	1 50
M. J. Shively, Frankfort, O	2d best Ben Davis	75
W. W. Farnsworth, Waterville, O	Best Black Gilliflower	1 50
T. S. Johnson, Gypsum, O	2d best Black Gilliflower	75
W. W. Farnsworth, Waterville, O	Best Black Detroit	1 50
J. R. Vance, Nashville, O	Best Danver's Winter Sweet	1 50
E. G. Stockman, Prospect, O	2d best Danver's Winter Sweet	75
Same	Best Dominie	1 50
J. R. Vance, Nashville, O	2d best Dominie	75
W. W. Farnsworth, Waterville, O	Best Fallawater	1 50
J. R. Vance, Nashville, O	2d best Fallawater	75
J. C. Vergon, Delaware, O	Best Famuse	1 50
W. W. Farnsworth, O	2d best Famuse	75
E. G. Cox, Bradrick, O	Best Grimes' Golden	1 50
G. N. Toops, Chillicothe, O	2d best Grimes' Golden	
W. W. Farnsworth, Waterville, O	Best Hubbardson	1 50
S. J. & S. R. Moore, Zanesville, O	2d best Hubbardson	75
G. N. Toops, Chillicothe, O	Best Jonathan	1 50
H. Bookwalter, Hallsville, O	2d best Jonathan	75
E. G. Stockman, Prospect, O	Best King (Tomkins Co.)	1 50
F. A. Brown, Chillicothe O	2d best King (Tomkins Co)	75
E. G. Stockman, Prospect O	Best Limber Twig	1 50
Hurst & Hurst, Chillicothe, O	2d best Limber Twig	75
J. C. Vergon, Delaware, O	Best Minkler	1 50
S. J. & S. R. Moore, Zanesville, O	2d best Minkler	75
Same	Best Northern Spy	1 50
E. G. Cox, Bradrick, O	2d best Northern Spy	75
Hurst & Hurst, Chillicothe, O	Best Paradise Winter Sweet	1 50
E. G. Stockman, Prospect, O	2d best Paradise Winter Sweet	75
J. G. Vergon, Delaware, O	Best Pennock	1 50
M. J. Shively, Frankfort O	2d best Pennock	75
E. G. Stockman, Prospect, O	Best Pound Sweet	1 50
J. R. Vance, Nashville, O	2d best Pound Sweet	75
H. Bookwalter, Hallsville, O	Best Peck's Pleasant	1 50
J. R. Vance, Nashville, O	2d best Peck's Pleasant	75
M. J. Shively, Frankfort, O	Best Pewankee	1 50
Mrs. O. C. Stockman, Prospect, O	2d best Pewankee	75
S. J. & S. R. Moore, Zanesville, O	Best Rambo	1 50
W. W. Farnsworth, Waterville, O	2d best Rambo	75
T. S. Johnson, Gypsum, O	Best Raule's Janet	1 50
D. V. Kuhn, Chillicothe, O	2d best Raule's Janet	75
W. W. Farnsworth, Waterville, O	Best Red Canada	1 50
T. S. Johnson, Gypsum, O	Best Rhode Island Greening	1 50
E. M. Woodward, Kirtland, O	2d best Rhode Island Greening	75
S. J. & S. R. Moore, Zanesville, O	Best Rome Beauty	1 50
E. G. Cox, Bradrick, O	2d best Rome Beauty	75
S. J. & S. R. Moore, Zanesville, O	Best Roman Stem	1 50
H. Bookwalter Hallsville, O	Best Roxbury Russett	1 50
E. G. Stockman, Prospect, O	2d best Roxbury Russett	75
T. S. Johnson, Gypsum, O	Best Swaar	1 50
J. R. Vance, Nashville, O	2d best Swaar	75
G. N. Toops, Chillicothe, O	Best Smith's Cider	1 50
F. A. Brown, Chillicothe, O	2d best Smith's Cider	75
J. R. Vance, Nashville, O	Best Smoke House	1 50
F. A. Brown, Chillicothe, O	2d best Smoke House	75

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Plate Apples—Winter.—Concluded.		
E. G. Cox, Bradrick, O	Best Stark	$1 50
Mrs. O. C. Stockman, Prospect, O	2d best Stark	75
J. R. Vance, Nashville, O	Best Spitzenberg Esopus	1 50
H. Bookwalter, Hallsville, O	Best Spitzenberg Kaighn	1 50
F. A. Brown, Chillicothe, O	2d best Spitzenberg Kaighn	75
T. S. Johnson, Gypsum, O	Best Seek-no-farther	1 50
E. G. Stockman, Prospect, O	2d best Seek-no-farther	75
J. R. Vance, Nashville, O	Best Talman Sweet	1 50
F. A. Brown, Chillicothe, O	2d best Talman Sweet	75
Hurst & Hurst, Chilicothe	Best Wagner	1 50
T. S. Johnson, Gypsum, O	2d best Wagner	75
W. W. Farnsworth	Best Walbridge	1 50
S. J. & S. R. Moore, Zanesville, O	2d best Walbridge	75
G. N. Toops, Chillicothe, O	Best White Pippin	1 50
Hurst & Hurst, Chilicothe, O	2d best White Pippin	75
Mrs. O. C. Stockman, Prospect, O	Best Willow Twig	1 50
G. N. Toops Chillicothe, O	2d best Willow Twig	75
M. J. Shively, Frankfort, O	Best Wine Sap	1 50
D. V. Kuhn, Chillicothe, O	2d best Wine Sap	75
E. G. Stockman, Prospect, O	Best York Imperial	1 50
Crab Apples.		
S. J. & S. R. Moore, Zanesville, O	Best Hughes' Virginia	1 50
H. Bookwalter, Hallsville, O	2d best Huges' Virginia	75
M. J. Shively, Frankfort, O	Best Hyslop	1 50
G. N. Toops, Chillicothe, O	2d best Hyslop	75
E. M. Woodward, Kirtland, O	Best Transcendent	1 50
S. J. & S. R. Moore, Zanesville, O	2d best Transcendent	75
E. G. Stockman, Prospect, O	Best Whitney's No. 20	1 50
W. W. Farnsworth, Waterville, O	2d best Whitney's No. 20	75
D. F. Corwin, Springboro, O	Best display of six varieties	3 00
E. G. Stockman, Prospect, O	2d best display of six varieties	2 00
Quinces.		
G N. Toops, Chillicothe, O	Best Champion	2 00
Same	Best Meech	2 00
E. G. Cox, Bradrick, O	2d best Meech	1 00
G. N. Toops, Chillicothe, O	Best Reas' Mammoth	2 00
H. Bookwalter, Hallsville, O	2d best Reas' Mammoth	1 00
Same	Best Orange	2 00
A. Pearce, North Ridgeville, O	2d best Orange	1 00
H. Bookwalter, Hallsville, O	Best peck of quinces	3 00
Plums.		
W. W. Farnsworth, Waterville, O	Best Bradshaw	2 00
C. W Counter, Toledo, O	2d best Bradshaw	1 00
T. S. Johnson, Gypsum, O	Coe's Golden Drop	2 00
C. W. Counter, Toledo, O	Best Duane's Purple	2 00
W. W. Farnsworth, Waterville, O	2d best Duane's Purple	1 00
Same	Best Genie	2 00
T. S. Johnson, Gypsum, O	2d best Genie	1 00
W. W. Farnsworth, Waterville, O	Best German Prune	2 00
E. V Rhoads, St. Paris, O	2d best German Prune	1 00
W. W. Farnsworth	Best Garfield	2 00
C. W. Counter, Toledo, O	2d best Garfield	1 00
E. M Woodard, Kirtland, O	Best Imperial Gage	2 00
W. W. Farnsworth, Waterville, O	2d best Imperial Gage	1 00
E. M. Woodard, Kirtland, O	Best Lombard	2 00
W. W. Farnsworth, Waterville, O	2d best Lombard	1 00
T. S. Johnson, Gypsum, O	Best Murdy	2 00
E. G. Cox, Bradrick O	2d best Murdy	1 00
Albert Pearce, North Ridgeville, O	Best Moore's Arctic	2 00
W. W. Farnsworth, Waterville, O	2d best Moore's Arctic	1 00
Same	Best Niagara	2 00
C. W. Counter, Toledo, O	2d best Niagara	1 00
T. S. Johnson, Gypsum, O	Best Pond's Seedling	2 00
W. W. Farnsworth, Waterville, O	2d best Pond's Seedling	1 00
Same	Best Reine Claude	2 00
T. S. Johnson, Gypsum, O	2d best Reine Claude	1 00
W. H. West, Chillicothe, O	Best Shropshire	2 00
Albert Pearce, North Ridgeville, O	2d best Shropshire	1 00
W. W. Farnsworth, Waterville, O	Best Shipper's Pride	2 00
C. W. Counter, Toledo, O	2d best Shipper's Pride	1 00

Horticultural Products—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Plums—Concluded.		
W. W. Farnsworth, Waterville. O	Best display, not less than ten varieties, plums.	$5 00
T. S. Johnson, Gypsum, O	2d best display, not less than ten varieties, plums	2 50
W. W. Farnsworth, Waterville, O	Best display, not less than 5 varieties, plums.	3 00
T. S. Johnson, Gypsum, O	2d best display, not less than 5 varieties, plums	1 50
Pears.		
W. W. Farnsworth, Waterville, O	Best six varieties of summer and fall	4 00
C. W Counter, Toledo, O	2d best six varieties of summer and fall	2 00
W. W. Farnsworth, Waterville, O	Best ten varieties of summer, fall and winter	5 00
C. W. Counter, Toledo, O	2d best ten varieties of summer, fall and winter	2 50
Same	Best three varieties of large-size and beauty to rule	3 00
W. W. Farnsworth, Waterville, O	2d best three varieties of large-size and beauty to rule	1 50
T. S. Johnson, Gypsum, O	Best variety of dessert—quality to rule	2 00
W. W. Farnsworth, Waterville, O	2d best variety of dessert—quality to rule	1 00
Same	Best display of twenty varieties—appearance and quality to rule	10 00
C. W. Counter, Toledo, O	2d best display of twenty varieties—appearance and quality to rule	5 00
W. W. Farnsworth, Waterville, O	Best Anjou	2 00
C. W. Counter, Toledo, O	2d best Anjou	1 00
E. M. Woodard, Kirtland, O	Best Bartlett	2 00
T. S. Johnson, Gypsum. O	2d best Bartlett	1 00
D. T. Corwin, Springboro, O	Best Beurre Bosc	2 00
L. M. Gregg, Springboro, O	2d best Beurre Bosc	1 00
T. S. Johnson, Gypsum, O	Best Beurre Clairgeau	2 00
W. W. Farnsworth, Waterville, O	2d best Beurre Clairgeau	1 00
C. W. Counter, Toledo, O	Best Clapp's Favorite	2 00
W. W. Farnsworth, Waterville, O	2d best Clapp's Favorite	1 00
C. W. Counter, Toledo, O	Best Columbia	2 00
W. W. Farnsworth, Waterville, O	2d best Columbia	1 00
T. S. Johnson, Gypsum O	Best Doyenne Boussoc	2 00
W. W. Farnsworth, Waterville, O	2d best Doyenne Boussoc	1 00
T. S Johnson, Gypsum, O	Best Duchess	2 00
F. A. Brown, Chillicothe, O	2d best Duchess	1 00
T. S. Johnson, Gypsum, O	Best Flemish Beauty	2 00
W. W. Farnsworth, Waterville, O	2d best Flemish Beauty	1 00
Same	Best Howell	2 00
T. S. Johnson, Gypsum, O	2 best Howell	1 00
Same	Best Kirtland	2 00
C. W. Counter, Toledo, O	2 best Kirtland	1 00
E. V. Rhoades, St. Paris, O	Best Keiffer	2 00
E. G. Cox, Bradrick, O	2d best Keiffer	1 00
T. S. Johnson, Gypsum, O	Best Lawrence	2 00
W. W. Farnsworth, Waterville, O	2d best Lawrence	1 00
E. V. Rhoades, St. Paris, O	Best Le Comte	2 00
C. W. Counter, Toledo, O	2d best Le Comte	1 00
T. S. Johnson, Gypsum O	Best Louise Bonne	2 00
C. W. Counter, Toledo, O	2d best Louise Bonne	1 00
W. W. Farnsworth, Waterville, O	Best Onondaga	2 00
C. W. Counter, Toledo, O	2d best Onondaga	1 00
W. W. Farnsworth, Waterville, O	Best President	2 00
C W. Counter, Toledo, O	2d best President	1 00
John W. Martin, Zanesville, O	Best Seckel	2 00
T. S. Johnson, Gypsum, O	2d best Seckel	1 00
W. W. Farnsworth, Waterville, O	Best Sheldon	2 00
T. S. Johnson, Gypsum, O	2d best Sheldon	1 00
C. W. Counter, Toledo, O	Best Vicar	2 00
W. W. Farnsworth, Waterville, O	2d best Vicar	1 00
E. V. Rhoades, St. Paris, O	Best Winter Nelis	2 00
D. F. Corwin, Springboro, O	2d best Winter Nelis	1 00
Grapes—Hardy.		
E. M. Woodard, Kirtland O	Best twenty varieties	10 00
C. W. Counter, Toledo, O	2d best twenty varieties	6 00
E. M. Woodard, Kirtland, O	Best ten varieties	5 00
W. W. West, Chillicothe, O	2d best ten varieties	3 00
E. M. Woodard, Kirtland, O	Best six varieties	4 00
W. H. West, Chillicothe, O	2d best six varieties	2 00
Same	Best 3 varieties	3 00
E. M. Woodard, Kirtland, O	2d best 3 varieties	1 50

HORTICULTURAL PRODUCTS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Grapes—Hardy—Concluded.		
E. M. Woodard, Kirtland, O	Best 3 plates early table grapes	$3 00
W. H. West, Chillicothe, O	2d best 3 plates early table grapes	1 50
E. M. Woodard, Kirtland, O	Best 3 plates late table grapes	3 00
W. H. West, Chillicothe, O	Best Agawam	2 00
E. M. Woodard, Kirtland, O	2d best Agawam	1 00
W. H. West, Chillicothe, O	Best Bacchus	2 00
T. S. Johnson, Gypsum, O	2d best Bacchus	1 00
C. W. Counter, Toledo, O	Best Brighton	2 00
W. H. West, Chillicothe, O	2d best Brighton	1 00
E. M. Woodard, Kirtland, O	Best Catawba	2 00
W. H. West, Chillicothe, O	2d best Catawba	1 00
E. M. Woodard, Kirtland, O	Best Concord	2 00
W. H. West, Chillicothe, O	2d best Concord	1 00
E. M. Woodard, Kirtland O	Best Delaware	2 00
W. H. West, Chillicothe, O	2d best Delaware	1 00
E. M. Woodard, Kirtland, O	Best Diana	2 00
Same	Best Duchess	2 00
Same	Best Eaton	2 00
Same	Best Elvira	2 00
C. W. Counter, Toledo, O	2d best Elvira	1 00
W. H. West, Chillicothe, O	Best Empire State	2 00
C. W. Counter, Toledo, O	2d best Empire State	1 00
E. M. Woodard, Kirtland, O	Best Early Ohio	2 00
Same	Best Green Mountain	2 00
C. W. Counter, Toledo, O	2d best Green Mountain	1 00
T. S. Johnson, Gypsum, O	Best R. B. Hayes	2 00
E. M. Woodard, Kirtland	2d best R. B. Hayes	1 00
W. H. West, Chillicothe, O	Best Ives	2 00
C. W. Counter, Toledo, O	2d best Ives	1 00
E. M. Woodard, Kirtland, O	Best Isabella	2 00
W. H. West, Chillicothe, O	2d best Isabella	1 00
T. S. Johnson Gypsum, O	Best Iona	2 00
W. H. West, Chillicothe, O	2d best Iona	1 00
C. W. Counter, Toledo, O	Best Lady	2 00
E. M. Woodard, Kirtland, O	2d best Lady	1 00
Same	Best Lady Washington	2 00
Same	Best Lindley	2 00
C. W. Counter, Toledo, O	2d best Lindley	1 00
E. M. Woodard, Kirtland, O	Best Martha	2 00
C. W. Counter, Toledo, O	2d best Martha	1 00
E. M. Woodard, Kirtland, O	Best Massasoit	2 00
C. W. Counter, Toledo, O	Best Moore's Diamond	2 00
W. H. West, Chillicothe, O	2d best Moore's Diamond	1 00
Same	Best Moore's Early	2 00
E. M. Woodard, Kirtland, O	2d Best Moore's Early	1 00
Same	Best Nectar	2 00
W. H. West, Chillicothe, O	Best Norton's Virginia	2 00
T. S. Johnson, Gypsum, O	2d best Norton's Virginia	1 00
E, G. Stockman, Prospect, O	Best Niagara	2 00
E. M. Woodard, Kirtland, O	2d best Niagara	1 00
Same	Best Pocklington	2 00
C. W. Counter, Toledo, O	2d best Pocklington	1 00
E. M. Woodard, Kirtland, O	Best Salem	2 00
E. G. Stockman, Prospect, O	Best Wilder	2 00
W. H West, Chillicothe, O	2d best Wilder	1 00
E. M. Woodard, Kirtland, O	Best Woodruff's Red	2 00
C. W. Counter, Toledo, O	2d best Woodruff's Red	1 00
Same	Best Worden	2 00
E. M. Woodard, Kirtland, O	2d best Worden	1 00
County Fruits.		
C. W. Counter, Toledo, O	Best county exhibit of 100 plates of fruits of various kinds	75 00
E G. Stockman, Prospect, O	2d best county exhibit of 100 plates of fruits of various kinds	50 00
T. S. Johnson, Gypsum, O	3d best county exhibit of 100 plates of fruits of various kinds	40 00
F. A. Brown, Chillicothe, O	4th best county exhibit of 100 plates of fruits of various kinds	25 00
L. M. Gregg, Springboro, O	5th best county exhibit of 100 plates of fruits of various kinds	20 00

PLANTS AND FLOWERS.

ALBERT HALE, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amount.
Plants—Professional List.		
E. L. Charles, Columbus, O	Best collection of plants—quality and growth to be considered	$20 00
George F. Brehmer, Chillicothe, O	2d best collection of plants—quality and growth to be considered	10 00
E. L. Charles, Columbus, O	Best collection of palms	15 00
George F. Brehmer, Chillicothe, O	2d best collection of palms	8 00
E. L. Charles, Columbus, O	Best collection of ferns and lycopodiums	10 00
George F. Brehmer, Chillicothe, O	2d best collection of ferns and lycopodiums	5 00
E. L. Charles, Columbus, O	Best collection of variegated plants	10 00
George F. Brehmer, Chillicothe, O	2d best collection of variegated plants	5 00
E. L. Charles, Columbus, O	Best collection of begonias	8 00
George F. Brehmer, Chillicothe, O	2d best collection of begonias	4 00
F. C. Breece, West Berlin, O	Best collection of cannas in bloom	10 00
E. L. Charles, Columbus, O	2d best collection of cannas in bloom	5 00
George F. Brehmer, Chillicothe, O	Best collection of draccæni	5 00
E. L. Charles, Columbus, O	2d best collection of draccæni	3 00
George F. Brehmer, Chillicothe, O	Best collection of crotons	10 00
E. L. Charles, Columbus, O	2d best collection of crotons	5 00
Same	Best collection of plants on trellis work	5 00
George F. Brehmer, Chillicothe, O	Best collection of aloes and cacti	5 00
E. L. Charles, Columbus, O	2d best collection of aloes and cacti	3 00
George F. Brehmer, Chillicothe, O	Best collection of fancy calladiums	5 00
E. L. Charles, Columbus, O	Best collection of carnations	5 00
F. C. Breece, West Berlin, O	Best collection of geraniums in bloom	5 00
E. L. Charles, Columbus, O	2d best collection of geraniums in bloom	3 00
Same	Best collection of asters	5 00
Same	Best pair of vases of living plants	5 00
Same	Best six hanging baskets of living plants	5 00
Cut Flowers—Florists List.		
Chas. A. Roth, Columbus, O	Best pair hand bouquets	5 00
E. L. Charles, Columbus, O	2d best pair hand bouquets	2 00
Chas. A. Roth, Columbus, O	Best arranged baskets	5 00
E. L. Charles, Columbus, O	2d best arranged baskets	2 00
Chas. A. Roth, Columbus, O	Best display of floral designs	20 00
E. L. Charles, Columbus, O	2d best display of floral designs	10 00
Chas. A. Roth, Columbus, O	Best single floral designs	8 00
E. L. Charles, Columbus, O	2d best single floral design	4 00
Chas. A. Roth, Columbus, O	Best display of cut roses	8 00
E. L. Charles, Columbus O	2d best display of cut roses	3 00
Cushman Gladiola Co., Euclid O	Best display of cut dahlias	5 00
Chas. A. Roth, Columbus, O	2d best display of cut dahlias	2 00
Cushman Gladiola Co., Euclid, O	Best display of cut gladioli	6 00
E. L. Charles, Columbus, O	2d best display of cut gladioli	3 00
Same	Best display of cut verbenas	3 00
Chas. A. Roth, Columbus, O	2d best display of cut verbenas	2 00
George F. Brehmer, Chillicothe, O	Best display of cut phloxes	3 00
Same	Best display of cut carnations	5 00
Chas. A. Roth, Columbus, O	2d best display of cut carnations	3 00
Same	Best display of cut asters	5 00
E. L. Charles, Columbus, O	2d best display of cut asters	3 00
Cushman Gladiola Co., Euclid, O	Best cut gladioli in twelve vases, twelve varieties, named, and three spikes of a kind	5 00
E. L. Charles, Columbus, O	Largest collection cut flowers shown in glasses or pots of sand, not less than six of a kind, properly labeled	8 00
Chas. A. Roth, Columbus, O	2d largest collection cut flowers shown in glasses or pots of sand, not less than six of a kind, properly labeled	4 00

PLANTS AND FLOWERS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Plants—Amateur List.		
Mrs. N. D. Perry, Columbus, O	Best collection of stove and green house plants—quality and growth to be considered	$15 00
Minnie Bieber, Delaware, O	2d best collection of stove and green house plants, quality and growth to be considered	8 00
Susie E. Ferry, Columbus, O	Best collection of not less than ten varieties of variegated leafed plants	8 00
Mrs. W R. Sprague, Brice, O	2d best collection of not less than ten varieties of variegated leafed plants	4 00
Susie E. Perry, Columbus, O	Best collection of begonias, not less than ten varieties	8 00
Mrs. W. R. Sprague, Brice, O	2d best collection of begonias, not less than ten varieties	4 00
Mary E. Zimmer, Zimmer, O	Best collection of aloes and cacti, in pots	5 00
C. P. Zimmer, Zimmer O	2d best collection of aloes and cacti, in pots	3 00
Mrs. W. R. Sprague, Brice, O	Best display of geraniums in variety, in bloom	5 00
Mrs. N. D. Perry, Columbus, O	2d best display of geraniums in variety, in bloom	3 00
Minnie Bieber, Delaware, O	Best collection of ferns and lycopodiums	5 00
C. P. Zimmer, Zimmer, O	2d best collection of ferns and lycopodiums	3 00
Mrs. W. R. Sprague, Brice, O	Best collection of plants on trellises	3 00
Mary E. Zimmer, Zimmer, O	2d best collection of plants on trellises	2 00
Mrs. W. R. Sprague, Brice, O	Best six hanging baskets of living plants	5 00
Mrs. Lon W. Taggart, Lewis Center, O	Best single rustic basket, filled	3 00
Cut Flowers and Floral Designs.		
Ellis Craig, Zimmer, O	2d largest and best collection of dahlias, not less than twelve named varieties	2 00
Clara Bieber, Delaware, O	2d largest and best collection of roses, named varieties	2 00
Mrs. E. G. Taggart, Lewis Center, O	Largest and best collection of verbenas, named varieties	3 00
Clara Bieber, Delaware, O	2d largest and best collection of verbenas, named varieties	2 00
Mrs. E. G. Taggart, Lewis Center. O	Largest and best collection of phloxes. named varieties	2 00
Minnie Bieber, Delaware, O	2d largest and best collection of phloxes, named varieties	1 00
Sarah B. Franklin, Chillicothe, O	Best display of asters	3 00
Minnie Bieber, Delaware, O	2d best display of asters	2 00
Mrs. J. B. Taggart, Delaware, O	Best display of balsams	2 00
Clara Bieber, Delaware O	2d best display of balsams	1 00
Minnie Bieber, Delaware, O.	Best display of geraniums	2 00
Mrs. N. D. Perry, Columbus, O	2d best display of geraniums	1 00
Mrs. E. G. Taggart, Louis Center, O	Best display of petunias	2 00
Mrs. S. O. Eggert, Massillon, O	2nd best display of petunias	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best display of gladioli	2 00
Mrs. S. O. Eggert, Massillon, O	2d best display of gladioli	1 00
Ellis Craig, Zimmer, O	Best display of double zinnias	2 00
Mrs. N. D. Perry, Columbus, O	2d best display of double zinnias	1 00
Mrs. L. W. Taggart, Lewis Center, O	Best and greatest display of cut flowers, in variety and quality, other than above	5 00
Mrs. N. D. Perry, Columbus, O	2d best and greatest display of cut flowers, in variety and quality, other than above	3 00
Mrs. S. O. Eggert, Massillon, O	Best pair of bouquets, any style	3 00
Susie E. Perry, Columbus, O	Best vase of cut flowers	3 00
Mrs. S. O. Eggert, Massillon, O	2d best vase of cut flowers	2 00
Susie E. Perry, Columbus, O	Best single floral design	5 00
Miss Millie McGuffey, Columbus, O	2d best single floral design	3 00
Mrs. L. W. Taggart, Lewis Center, O.	Best collection of native flowers, with list of names	3 00
Mrs. J. B. Taggart, Delaware, O	2d best collection of native flowers, with list of names	2 00

WOMAN'S WORK—H. S. GRIMES—Member in Charge.

TEXTILE FABRICS AND DOMESTIC MANUFACTURES.

Owner's Name and Postoffice.	Name of Article.	Amount.
Household Fabrics.		
Miss Elizabeth Leigh, Groveport, O	Best silk quilt (crazy)	$3 00
Mrs. D. W. Collison, Columbus, O	2d best silk quilt (crazy)	1 00
Mrs. A. W. Graham, Reynoldsburg, O	Best silk quilt (not crazy)	3 00
W. E. Rodepoch, Columbus, O	2d best silk quilt (not crazy)	1 00
Mrs. E. Buck, Lockland, O	Best velvet quilt (large)	3 00
Alice R. Wiles, Columbus, O	2d best velvet quilt (large)	1 00
Miss Mattie Hall, Lexington, Ky	Best worsted quilt	2 00
Mrs. E. Buck, Lockland, O	2d best worsted quilt	1 00
Mrs. P. Grooms, Brecon, O	Best log cabin quilt	2 00
Mrs. A. W. Graham, Reynoldsburg, O	2d best log cabin quilt	1 00
Mrs. Chas. Clark, Columbus, O	Best white quilt	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best white quilt	1 00
Mrs. P. Grooms, Brecon, O	Best patchwork quilt	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best patchwork quilt	1 00
Mrs. P. Grooms, Brecon, O	Best cradle quilt	1 00
Mrs. B. O. Smith, Belleville, O	2d best cradle quilt	50
Mrs. E Buck, Lockland, O	Best cotton comfort	2 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best cotton comfort	1 00
Same	Best worsted comfort	2 00
Mrs. Thos. Poole Reynoldsburg, O	2d best worsted comfort	1 00
Emma O. Wallace, Jacksontown, O	Best hearth rug (rag)	1 00
Jennie Fleming, Worthington, O	2d best hearth rug (rag)	50
Mrs Wm. Richey, Pataskala, O	Best hearth rug (yarn)	1 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best hearth rug (yarn)	50
Mrs. Thos. Poole, Reynoldsburg, O	Best rag carpet, 10 yards	3 00
Mrs. P. Grooms, Brecon, O	2d best rag carpet, 10 yards	2 00
Mrs. A. W. Graham, Reynoldsburg O	Best domestic flannel, 10 yards	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best domestic flannel, 10 yards	1 00
Minnie Bieber, Delaware, O	Best domestic linen, 2 yards	2 00
Mrs. H. Bieber, Delaware, O	2d best domestic linen, 2 yards	1 00
Miss Nell C. Smith, Belleville, O	Best specimen darning	1 00
Mrs. R. Kitchen, Millville, Pa	2d best specimen darning	50
Knitting.		
Mrs. P. Grooms, Brecon, O	Best pair woolen knit stockings	1 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best pair woolen knit stockings	50
Mrs. P. Grooms, Brecon O	Best pair woolen knit socks	1 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best pair woolen knit socks	50
Miss Mattie Hall, Lexington, Ky	Best pair woolen knit baby socks	1 00
Mrs. J. O. Jordan, Columbus, O	2d best pair woolen knit baby socks	50
Mrs. R. Kitchen, Millville, Pa	Best pair woolen knit mittens	1 00
Mrs. Mattie Hall, Lexington, Ky	2d best pair woolen knit mittens	50
Mrs. E. Buck, Lockland, O	Best pair silk knit stockings	1 00
Mrs. Wm. Ritchey, Pataskala, O	2d best pair silk knit stockings	50
Sadie E. Worley, Clarksville, O	Best pair silk knit socks	1 00
Mrs. Carty, Columbus, O	2d best pair silk knit socks	50
Miss L. P. Warman, Norwood, O	Best pair silk knit mittens	1 00
Mrs. B. O. Smith, Belleville, O	2d best pair silk knit mittens	50
Mrs. P. Grooms, Brecon. O	Best pair cotton knit socks	1 00
Mrs. Victoria Fields, Caledonia, O	2d best pair cotton knit socks	50
Mrs. Barnett, Columbus, O	Best bed spread, knit	3 00
Mrs. E. Buck, Lockland, O	2d best bed spread, knit	2 00
Mrs. P. Grooms, Brecon, O	Best tidy, knit	1 00
Mrs. M. Rinehart, Marion, O	2d best tidy, knit	50
Miss Mattie Hall, Lexington, Ky	Best cotton lace, knit	1 00
Miss Elizabeth Leigh, Groveport, O	2d best cotton lace, knit	50
Miss Mattie Hall, Lexington, Ky	Best woolen lace, knit	1 00
Mrs. C. J. McClure, Xenia, O	2d best woolen lace, knit	50
Needle Work—Hand Made.		
Mrs. J. F. Angell, Bucyrus, O	Best pair fancy sheets	2 00
Mrs. Kate Bloom, Xenia, O	2d best pair fancy sheets	1 00
Mrs. Mattie Hall, Lexington, Ky	Best pair fancy pillow shams	2 00
Mrs. Jas. McCullough, Uhrichsville, O	2d best pair fancy pillow shams	1 00
Mrs. M. Rinehart, Marion, O	Best pair braided pillow shams	2 00
Mrs. L. Trimble, Marion, O	2d best pair braided pillow shams	1 00
Mrs. M. Rinehart, Marion, O	Best braided night dress	2 00
Mrs. L. Trimble, Marion, O	2d best braided night dress	1 00
Mrs. M. Rinehart, Marion, O	Best braided chemise	2 00
Mrs. L. Trimble, Marion, O	2d best braided chemise	1 00

TEXTILE FABRICS AND DOMESTIC MANUFACTURES—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Needle Work—Hand Made—Concluded.		
Mrs. C. J. McClure. Xenia, O.	Best infant's robe	$2 00
Mrs. James McCullough, Uhrichsville, O.	2d best infant's robe	1 00
Miss Julia Gill, Columbus, O.	Best braided apron	2 00
Mrs. E. Buck, Lockland, O.	2d best braided apron	1 00
W. E. Rodepoch, Columbus, O.	Best bed spread, darned net	2 00
Mrs. B. O. Smith, Bellville, O.	2d best bed spread, darned net	1 00
Mrs. C. J. McClure, Xenia, O.	Best gent's shirt	2 00
Mrs. Mary F. Maxwell, Reynoldsbnrg, O.	2d best gent's shirt	1 00
Machine Sewing—Amateur.		
Mrs. P. Grooms, Brecon, O.	Best suit lady's underwear, 3 pieces	$2 00
Mrs. C. J. McClure, Xenia, O.	2d best suit lady's underwear, 3 pieces	1 00
Mrs. Jas. McCullough, Uhrichsville, O.	Best infant's suit	2 00
Mrs C. J. McClure. Xenia, O.	2d best infant's suit	1 00
Miss L. P. Warman, Norwood, O.	Best gent's shirt	2 00
Mrs. C. J. McClure, Xenia, O.	2d best gent's shirt	1 00
Miss M. Johnson, Dayton, O.	Best fancy apron	1 00
Miss L. P. Warman, Norwood, O.	2d best fancy apron	50
Mrs. N. D. Perry, Columbus, O.	Best sun bonnet	1 00
Mrs. Thos. Poole, Reynoldsburg, O.	2d best sun bonnet	50
Mrs. E. Buck, Lockland, O.	Best dress for lady	2 00
Mrs. C. J. McClure, Xenia, O	2d best dress for lady	1 00
Miss L. P. Warman. Norwood, O.	Best tucked night dress	2 00
Mrs. Mary F. Maxwell, Reynoldsburg, O.	2d best tucked night dress	1 00
Miss L. P. Warman, Norwood, O.	Best tucked chemise	2 00
Mrs. C. J. McClure, Xenia, O.	2d best tucked chemise	1 00
Mrs. Thos. Poole, Reynoldsburg, O.	Best tucked skirt	2 00
Miss L. P. Warman. Norwood, O.	2d best tucked skirt	1 00
Mrs. Mary F. Maxwell, Reynoldsburg, O.	Best tucked pillow cases	1 00
Miss Kate Bloom, Xenia, O.	2d best tucked pillow cases	50
Mrs. C. J. McClure, Xenia, O.	Best display not less than five pieces	3 00
Mrs. E. Buck, Lockland, O.	2d best display not less than five pieces	2 00
Delft Embroidery—On Linen.		
Miss Nell C. Smith, Bellville, O.	Best tray cloth	$1 00
Mrs. E. Buck, Lockland, O.	2d best tray cloth	50
Mrs. J. T. Angell, Bucyrus, O	Best pin cushion	1 00
Mrs. Julia Gill. Columbus, O.	2d best pin cushion	50
Mrs. Hattie Bolander, Marion, O.	Best specimen	1 00
Miss Nell C. Smith, Bellville, O.	2d best specimen	50
Miss Julia Gill. Columbus, O	Best display not less than eight pieces	3 00
Child's Class.		
L. W. Gregg, Springboro, O.	Best specimen outline embroidery	$1 00
Blanche Hart, Caledonia. O.	2d best specimen outline embroidery	50
Belle Higgins, Columbus, O.	Best specimen cross-stitch work	1 00
Deb. Rinehart, Marion, O.	2d best specimen cross-stitch work	50
Same	Best specimen drawn thread work	1 00
Belle Higgins, Columbus, O.	2d best specimen drawn thread work	50
Deb Rinehart, Marion, O.	Best specimen crochet work	1 00
Blanche Hart, Caledonia, O.	2d best specimen crochet work	50
Arvilla Kitchen, Millville, Pa.	Best specimen plain sewing	1 00
Blanche Hart, Caledonia, O	2d best speclmen plain sewing	50
Same	Best specimen paper flowers	1 00
Deb Rinehart, Marion, O.	Best specimen knitting	1 00
Blanche Hart, Caledonia, O.	2d best specimen knitting	50
Belle Higgins, Columbus, O.	Best specimen silk embroidery	1 00
Deb Rinehart, Marion, O.	2d best specimen silk embroidery	50
Arvilla Kitchen, Millville, Pa.	Best specimen patching	1 00
Deb Rinehart, Marion, O.	Best specimen fabric painting	1 00
Blanche Hart, Caledonia, O.	2d best specimen fabric painting	50
Arvilla Kitchen, Millville, Pa	Best specimen pencil drawing	1 00
Lace and Tatting Work.		
Mrs. J. M. Coe. Mt. Gilead, O.	Best point lace handkerchief	$3 00
Mrs. O. J. Miller, Mt. Gilead, O.	2d best point lace handkerchief	2 00
Mrs. J. M. Coe, Mt. Gilead, O.	Best point lace collar	2 00
Mrs. O. J. Miller. Mt. Gilead, O.	2d best point lace collar	1 00
Same	Best point lace infant's cap	2 00
Mrs. J. M. Coe, Mt. Gilead, O	2d best point lace infant's cap	1 00
Mrs. P. Grooms, Brecon, O	Best point lace specimen	2 00
Mrs. C. H. Rudolph. Massillon, O.	2d best point lace specimen	1 00

TEXTILE FABRICS AND DOMESTIC MANUFACTURES—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Lace and Tatting Work—Concluded		
Mrs. J. M. Coe. Mt. Gilead, O	Best display of point lace	$3 00
Mrs. O. J. Miller, Mt. Gilead, O	2d best display of point lace	2 00
Lucy J. Clark, Croton, O	Best tatting collar	2 00
Miss Callie Fickey, Columbus, O	2d best tatting collar	1 00
Mrs. C. J. Rudolph, Massillon, O	Best tatting handkerchief	2 00
Madge Miller, Washington C. H., O	2d best tatting handkerchief	1 00
Miss Mattie Hall, Lexington, Ky	Best tatting specimen	2 00
Madge Miller, Washington C. H., O	2d best tatting specimen	1 00
Mrs. C. J. Westerman, Columbus, O	2d best display of tatting	3 00
Crochet Work.		
Miss Mattie Hall, Lexington, Ky	Best bed spread, cotton or linen	3 00
Mrs. Kate Emrick, Columbus, O	2d best bed spread, cotton or linen	2 00
Mrs. W. O. Henderson, Columbus, O	Best lace, cotton or linen, 2 or more yards	2 00
Miss M. Johnson, Dayton, O	2d best lace, cotton or linen, 2 or more yards.	1 00
Miss Mattie Hall, Lexington, Ky	Best lace, woolen, 2 or more yards	2 00
Mrs. R. Kitchen, Millville, Pa	2d best lace, woolen, 2 or more yards	1 00
Mrs. C. J. McClure, Xenia, O	Best shawl, ice wool	2 00
Mrs. M. Johnson, Dayton, O	2d best shawl, ice wool	1 00
Mrs. C. J. McClure, Xenia, O	Best infant's sacque	1 00
Miss Dell Lanum, Washington C. H., O	2d best infant's sacque	50
Mrs. E. Buck, Lockland, O	Best fascinator	1 00
Miss M. Johnson, Dayton, O	2d best fascinator	50
Mrs. Chas. Higgins, Columbus, O	Best shoulder cape	1 00
Mrs. L. A. Smith, Jackson, Mich	2d best shoulder cape	50
Mrs. R. Kitchen, Millville, Pa	Best collar	1 00
Mrs. E. Buck, Lockland, O	2d best collar	50
Mrs. Victoria Fields, Caledonia, O	Best toilet set	1 00
Mrs. C J. McClure, Xenia, O	2d best toilet set	50
Miss Elizabeth Leigh, Groveport, O	Best table mats	1 00
Jessie Hamilton, Columbus, O	2d best table mats	50
Mrs. J. A. Jordan, Columbus, O	Best slippers	1 00
Mrs. Lillian Manship, Van Wert, O	2d best slippers	50
Mrs. B. O. Smith, Bellville, O	Best child's hood	1 00
Mrs. C. J. McClure, Xenia, O	2d best child's hood	50
Miss M. Johnson, Dayton, O.	Best tidy	1 00
Mrs. Kate Emrick, Columbus, O	2d best tidy	50
Mrs. Hattie Bolander, Marion, O	Best purse	1 00
Miss M. Johnson, Dayton, O	2d best purse	50
Miss Mattie Hall, Lexington, Ky	Best skirt	2 00
Carrie Van Sant, Delaware, O	2d best skirt	1 00
Mrs. Thos. Poole, Reynoldsburg, O	Best large afghan	3 00
Mrs. L. A. Smith, Jackson, Mich	2d best large afghan	1 00
Mrs. J. A. Jordan, Columbus, O	Best small afghan	2 00
Miss Kate Bloom, Xenia, O	2d best small afghan	1 00
Mrs. E. Buck, Lockland, O	Best yoke	1 00
Mrs. L. Trimble, Marion, O	2d best yoke	50
Miss Mattie Hall, Lexington, Ky	Best display of finished pieces, not less than ten	5 00
Mrs. C. J. McClure, Xenia, O	2d best display of finished pieces, not less than ten	2 00
Outline Embroidery.		
Mrs. Gene M. Squier, Bellville, O	Best mantel lambrequin	2 00
Miss L. P. Warman, Norwood, O	2d best mantle lambrequin	1 00
Mrs. M. Rinehart, Marion, O	Best pillow shams	2 00
Mrs. E. Buck, Lockland, O	2d best pillow shams	1 00
Miss Mattie Hall, Lexington, Ky	Best sofa pillow, made up	2 00
Miss Nell C. Smith, Bellville, O	2d best sofa pillow, made up	1 00
Miss M. Johnson, Dayton, O	Best lunch cloth	2 00
Miss Mattie Hall, Lexington, Ky	2d best lunch cloth	1 00
Mrs. M. Rinehart, Marion, O	2d best lunch set	1 00
Mrs. Chas. Higgins, Columbus, O	Best tidy	1 00
Mrs. C. J. McClure, Xenia	2d best tidy	50
Mrs. R. Kitchen, Millville, Pa	Best splasher	1 00
Miss Mattie Hall, Lexington, Ky	2d best splasher	50
Miss M. Johnson, Dayton, O	Best table mats, not less than five	2 00
Mrs. M. Rinehart, Marion, O	2d best table mats, not less than five	1 00
Miss Mattie Hall, Lexington, Ky	Best tray cloth	1 00
Mrs. Hattie Bolander, Marion, O	2d best tray cloth	50
Miss Mattie Hall, Lexington, Ky	Best six doylies	1 00
Mrs. E. Buck, Lockland, O	2d best six doylies	50
Miss M. Johnson, Dayton, O	Best specimen	1 00
Miss Mattie Hall, Lexington, Ky	2d best specimen	50
Miss M. Johnson, Dayton, O	Best display, not less than ten pieces	3 00
Miss Mattie Hall, Lexington, Ky	2d best display, not less than ten pieces	2 00

TEXTILE FABRICS AND DOMESTIC MANUFACTURES.—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Embroidery.		
Miss Kate Bloom, Xenia, O	Best night dress	2 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best night dress	1 00
Miss Kate Bloom, Xenia, O	Best chemise	2 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best chemise	1 00
Same	Best pillow shams	2 00
Jessie Hamilton, Columbus, O	2d best pillow shams	1 00
Mrs. M. Rinehart, Marion, O	Best suit of underwear	2 00
Mrs. C. J. McClure, Xenia, O	2d best suit of underwear	1 00
Madge Miller, Washington C. H., O	Best wall splasher	1 00
Mrs. Gene M. Squier, Bellville, O	2d best wall splasher	50
Madge Miller, Washington C. H., O	Best tidy	1 00
Mrs. Gene M. Squier, Bellville, O	2d best tidy	50
Mrs. Mary F. Maxwell, Reynoldsburg, O	Best handkerchief	1 00
Mrs. L. Trimble, Marion, O	2d best handkerchief	50
Miss Mattie Hall, Lexington, Ky	Best specimen	2 00
Miss Nell C. Smith, Bellville, O	2d best specimen	1 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	Best sideboard cover	1 00
Miss Nell C. Smith, Bellville, O	2d best sideboard cover	50
Cross-stich.		
Mrs. L. A. Smith, Jackson, Mich	Best sofa pillow, made up	2 00
Miss Elizabeth Leigh, Groveport, O	2d best sofa pillow, made up	1 00
Mrs. B. O. Smith, Bellville, O	Best tidy	1 00
Mrs. C. J. McClure, Xenia, O	2d best tidy	50
Miss Mattie Hall, Lexington, Ky	Best large afghan	3 00
Mrs. B. O. Smith, Bellville, O	2d best large afghan	2 00
Miss Mattie Hall, Lexington, Ky	Best small afghan	2 00
Jessie Hamilton, Columbus, O	2d best small afghan	1 00
Mrs. W. R. Sprague, Brice, O	Best chair cushion, made up	1 00
Mrs. M. Rinehart, Marion, O	2d best chair cushion, made up	50
Jessie Hamilton, Columbus, O	Best slippers	2 00
Mrs. C J. McClure, Xenia, O	2d best slippers	1 00
Mrs. M. Phillips, Columbus, O	Best foot rest, made up	2 00
Mrs. M. Rinehart, Marion, O	2d best foot rest, made up	1 00
Mrs. L. A. Smith, Jackson, Mich	Best specimen	1 00
Mrs. C. J McClure	2d best specimen	50
Mrs M. Rinehart, Marion, O	Best display of not less than five pieces	3 00
Mrs. L. Trimble, Marion, O	2d best display of not less than five pieces	2 00
Silk Embroidery.		
Mrs. E. Buck, Lockland, O	Best lady's dress	3 00
Mrs. J. B. Garvin, Fremont, O	2d best lady's dress	2 00
Mrs. E. Buck, Lockland, O	Best lady's skirt	2 00
Same	Best lady's sacque	2 00
Mrs. L Trimble, Marion, O	Best silk handkerchief with initial	1 00
Mrs. Gene M. Squier, Bellville, O	2d best silk handkerchief with initial	50
Mrs. E. Buck, Lockland, O	Best child's dress	1 00
Same	Best infant's cloak	2 00
Mrs. P. Grooms, Brecon, O	Best infant's shawl	2 00
Mrs. W. P. Van Horn, Columbus, O	2d best infant's shawl	1 00
Mrs. P. Grooms, Brecon, O	Best infant's skirt	1 00
Mrs. C. J. McClure, Xenia, O	2d best infant's skirt	50
Mrs. E. Buck, Lockland, O	Best infant's sacque	1 00
Mrs. J. F. Angell, Bucyrus, O	2d best infant's sacque	50
Miss Elizabeth Leigh, Groveport, O	Best specimen	2 00
Mrs. Gene W. Squier, Bellville, O	2d best specimen	1 00
Mrs. J. F. Angell, Bucyrus, O	Best display, not less than five pieces	5 00
Mrs. C. H. Randolph, Massillon, O	2d best display, not less than five pieces	2 00
Roman Embroidery.		
Mrs. O. L. Davis, Columbus	Best center piece	2 00
Miss Mattie Hall, Lexington, Ky	2d best center piece	1 00
Miss Elizabeth Leigh, Groveport, O	Best tray cloth	2 00
Miss Nell C. Smith, Bellville, O	2d best tray cloth	1 00
Miss M. Johnson, Dayton, O	Best lunch cloth	2 00
Mrs. C. O. Dunlap, McArthur, O	2d best lunch cloth	1 00
Miss Mattie Hall, Lexington, Ky	Best specimen	2 00
Mrs. J. F. Angell, Bucyrus, O	2d best specimen	1 00
Mrs. O. L. Davis, Columbus, O	Best six doylies	2 00
Mrs. E. Buck, Lockland, O	2d best six doylies	1 00
Mrs. J. F. Angell, Bucyrus, O	Best pin cushion	1 00
Mrs. E. Buck, Lockland, O	2d best pin cushion	50
Same	Best chair cushion, made up	2 00
Mrs. L. Trimble, Marion, O	2d best chair cushion, made up	1 00
Mrs. J. F. Angell, Bucyrus, O	Best display of not less than five pieces	3 00
Mrs. P Grooms, Brecon, O	2d best display of not less than five pieces	2 00

TEXTILE FABRICS AND DOMESTIC MANUFACTURES—Continued.

Owner's Name and Postoffice.	Name of Article.	Amount.
Drawn Thread Work.		
Mrs. Hattie Curren, Columbus, O	Best large table cover	$2 00
T. E. Helfonstein, Portsmounh, O	2d best large table cover	1 00
Mrs. Cornelia Olinger, Marion, O	Best center piece	2 00
Mrs Hattie Curren, Columbus, O	2d best center piece	1 00
Same	Best tray cloth	2 00
T. E. Helfonstein, Portsmouth, O	2d best tray cloth	1 00
Jessie Hamilton, Columbus, O	Best dresser scarf	2 00
Miss Mattie Hall, Lexington, Ky	2d best dresser scarf	1 00
Miss L. P. Warman, Norwood, O	Best sideboard scarf	2 00
Mrs. Hattie Curren, Columbus, O	2d best sideboard scarf	1 00
Mrs. P. Grooms, Brecon, O	Best 6 doylies	2 00
Mrs. Cornelia Olinger, Marion, O	2d best 6 doylies	1 00
T. E. Helfonstein, Columbus, O	Best 6 large dinner napkins	2 00
Mrs. Hattie Curren, Columbus, O	2d best 6 large dinner napkins	1 00
Madge Miller, Washington C. H, O	Best tidy	1 00
Mrs. Hattie Curren, Columbus, O	2d best tidy	50
Mrs. Cornelia Olinger, Marion, O	Best handkerchief	1 00
T. E Helfonstein, Portsmouth, O	2d best handkerchief	50
Miss L. P. Warman, Norwood, O	Best specimen	1 00
Mrs. Wm. Ritchey, Pataskala, O	2d best specimen	50
Mrs. Gene M. Squire, Bellville, O	Best specimen on silk	1 00
Miss L. P. Warman, Norwood, O	2d best specimen on silk	50
Madge Miller, Washington C. H., O	Best specimen hem stitching	1 00
Mrs. C. H. Randolph, Massillon, O	2d best specimen hem stitching	50
Mrs. P. Grooms, Brecon, O	Best display of not less than 10 pieces	3 00
Mrs. Hattie Curren, Columbus, O	2d best display of not less than 10 pieces	2 00
Ornamental Work.		
Miss Hannah Dresbach, Columbus, O	Best specimen bead work	2 00
Mrs. M. Rhinehart, Marion, O	2d best specimen bead work	1 00
Mrs. John Gill, Columbus, O	Best specimen paper flowers	2 00
Mrs. Lillian Manship, Van Wert, O	2d best specimen paper flowers	1 00
Miss Nell C. Smith, Bellville, O	Best fancy calendar	1 00
Alice R. Wiles, Columbus, O	2d best fancy calendar	50
Mrs. Gene W. Squire, Bellville, O	Best fancy jewel box	1 00
Miss Nell C. Smith, Bellville, O	2d best fancy jewel box	50
Mrs. W. H. Batdorf, St. Paris, O	Best fancy blotter	1 00
Alice R. Wiles, Columbus, O	2d best fancy blotter	50
Mrs. Lillian Manship, Van Wert, O	Best paper lamp shade	1 00
Miss L. P. Warman, Norwood, O	Best dressed doll	1 00
Open to Amateurs Only.		
Mrs. R. Kitchen, Millville, Pa	Best paper lamp shade	50
Fabric Painting.		
Miss M. Johnson, Dayton, O	Best painting on silk	2 00
Mrs. W. H. Batdorf, St. Paris, O	2d best painting on silk	1 00
Frances A. Bryant, Springfield, O	Best painting on satin	2 00
Mrs. Elizabeth Turner, Columbus, O	2d best painting on satin	1 00
Miss M. Johnson, Dayton, O	Best painting on velvet	2 00
Emma L. Bryan, Columbus, O	2d best painting on velvet	1 00
Mrs. Elizabeth Turner, Columbus, O	Best painting on bolting cloth	2 00
Mrs. Virginia Murphy, Columbus, O	2d best painting on bolting cloth	1 00
Frances A. Bryant, Springfield, O	Best painting on wood	2 00
Miss Nell C. Smith, Bellville, O	2d best painting on wood	1 00
Mrs. E. Buck, Lockland, O	Best painting on celluloid	2 00
Frances A. Bryant, Springfield, O	2d best painting on celluloid	1 00
Miss M. Johnson, Dayton, O	Best painting on chamois	2 00
Frances A. Bryant, Springfield, O	2d best painting on chamois	1 00
Miss M. Johnson Dayton, O	Best tapestry painting	2 00
Frances A. Bryant, Springfield, O	2d best tapestry painting	1 00
Mrs. C. O. Dunlap, McArthur, O	Best lustre painting	2 00
Mrs. Elizabeth Turner, Columbus, O	2d best lustre painting	1 00
Emma L. Bryan, Columbus, O	Best hand painted fan	2 00
Mrs. E. Buck, Lockland, O	2d best hand painted fan	1 00
Alice R. Wiles, Columbus, O	Best hand painted plaque (not china)	2 00
Emma L. Bryan, Columbus, O	2d best hand painted plaque (not china)	1 00
Frances A Bryant, Springfield, O	Best hand painted screen	3 00
Mrs. Virginia Murphy, Columbus, O	2d best hand painted screen	2 00
Frances A. Bryant, Springfield, O	Best hand painted banner	2 00
Mrs. Lawrence Brundage, Xenia, O	2d best hand painted banner	1 00
Mrs. W. H. Batdorf, St. Paris, O	Best display of not less than 10 pieces	5 00
Frances A. Bryant, Springfield, O	2d best display of not less than 10 pieces	3 00

TEXTILE FABRICS AND DOMESTIC MANUFACTURES—Continued.

Owners's Name and Postoffice.	Name of Article.	Amount.
Art Needle Work—For Amateurs.		
Mrs. Gene W. Squier, Bellville, O	Best mantel lambrequin	$3 00
Mrs. N. E. Lovejoy, Columbus, O	2d best mantel lambrequin	2 00
Mrs. Chas. Higgins, Columbus, O	Best sofa pillow, made up	2 00
Caroline Hambling, Columbus, O	2d best sofa pillow, made up	1 00
E. B. Yarnell, Columbus, O	Best lunch cloth	3 00
Miss Mattie Hall, Lexington, Ky	2d best lunch cloth	2 00
Madge Miller, Washington C. H., O	Best tray cloth	2 00
Mrs. J. B. Garvin, Fremont O	2d best tray cloth	1 00
Miss Julia Gill, Columbus, O	Best handkerchief case	2 00
Mrs. J. F. Angell, Bucyrus, O	2d best handkerchief case	1 00
Miss Julia Gill, Columbus, O	Best slipper case	2 00
Miss M. Johnson, Dayton, O	2d best slipper case	1 00
Same	Best glove case	2 00
Miss Julia Gill, Columbus, O	2d best glove case	1 00
Same	Best night dress case	2 00
Mrs. Lawrence Brundage, Xenia, O	2d best night dress case	1 00
Mrs. C. J. McClure, Xenia, O	Best broom case	2 00
Jessie Hamilton, Columbus, O	2d best broom case	1 00
Miss Julia Gill, Columbus, O	Best photograph case	2 00
Mrs. E. Buck, Lockland, O	2d best photograph case	1 00
Same	Best scrap basket	2 00
Mrs. Chas. Higgins, Columbus, O	Best table scarf	2 00
Mrs. Gene W. Squier, Bellville, O	2d best table scarf	1 00
Miss M. Johnson, Dayton, O	Best dresser scarf	2 00
Mrs. E. Buck, Lockland, O	2d best dresser scarf	1 00
Miss Mattie Hall, Lexington, Ky	Best table center	2 00
Mrs. J. F. Angell, Bucyrus, O	2d best table center	1 00
Miss Elizabeth Leigh, Groveport, O	Best six finger bowl doylies	2 00
Mrs. J. F. Angell, Bucyrus, O	2d best six finger bowl doylies	1 00
Same	Best six cake doylies	2 00
Mrs. W. S. Miller, Columbus, O	2d best six cake doylies	1 00
Mrs. Gene W. Squier, Bellville, O	Best toilet set, cushion and bottles	2 00
Mrs. J. F. Angell, Bucyrus, O	2d best toilet set, cushion and bottles	1 00
Mrs. Gene W. Squier, Bellville, O	Best picture mat and frame	2 00
Same	2d best picture mat and frame	1 00
Madge Miller, Washington C. H., O	Best table cloth and napkins, thirteen pieces	4 00
Mrs. Hattie Bolander, Marion, O	2d best table cloth and napkins, thirteen pieces	2 00
Madge Miller, Washington C. H., O	Best jewel embroidery	2 00
Mrs. Gene W. Squier, Bellville, O	2d best jewel embroidery	1 00
Same	Best Bulgarian work	2 00
Miss M. Johnson, Dayton, O	2d best Bulgarian work	1 00
Mrs. E. Buck, Lockland, O	Best three-panel fire screen	4 00
Mrs. Gene W. Squier, Bellville, O	Best table cover	2 00
Mrs. E. Buck, Lockland, O	2d best table cover	1 00
Mrs. Gene W. Squier, Bellville, O	Best book cover	1 00
Miss Julia Gill, Columbus, O	2d best book cover	50
Madge Miller, Washington, C. H., O	Best sideboard cover	2 00
Miss M. Johnson, Dayton, O	2d best sideboard cover	1 00
Mrs. Gene W. Squier, Bellville, O	Best hand screen	2 00
Mrs. E. Buck, Lockland, O	2d best hand screen	1 00
Mrs. Gene W. Squier, Bellville, O	Best lamp screen	2 00
Miss M. Johnson, Dayton, O	2d best lamp screen	1 00
Mrs. Chas. Higgins, Columbus, O	Best head rest, made up	2 00
Miss L. P. Warman, Norwood, O	2d best head rest, made up	1 00
Mrs. P. Grooms, Brecon, O	Best slippers, made up	2 00
Miss Fannie Fearn, Groveport, O	2d best slippers, made up	1 00
Mrs. E. Buck, Lockland, O	Best shopping bag	2 00
Miss Mattie Hall, Lexington, Ky	Best wall splasher	1 00
Mrs. C. O. Dunlap, McArthur, O	2d best wall splasher	50
Miss M. Johnson, Dayton, O	Best laundry bag	2 00
Mrs. J. F. Angell, Bucyrus, O	2d best laundry bag	1 00
Miss M. Johnson, Dayton, O	Best fancy tidy	2 00
Mrs. P. Grooms, Brecon, O	2d best fancy tidy	1 00
Mrs. Gene W. Squier, Bellville, O	Best fancy pin cushion	1 00
Mrs. Hattie Bolander, Marion O	2d best fancy pin cushion	50
Mrs. P. Grooms, Brecon, O	Best ladies' hose	2 00
Mrs. E Buck, Lockland, O	2d best ladies' hose	1 00
Jessie Hamilton, Columbus, O	Best ottoman, made up	2 00
Mrs. P. Grooms, Brecon, O	2d best ottoman, made up	1 00
Mrs. C. J. McClure, Xenia, O	Best gent's smoking jacket	3 00
E. B. Yarnell, Columbus, O	Best single specimen	2 00
Mrs. W. S. Miller, Columbus, O	2d best single specimen	1 00
Mrs. Gene W. Squier, Bellville, O	Best display of art needle work, not less than 12 finished pieces	10 00
Mrs. J. F. Angell, Bucyrus, O	2d best display of art needle work, not less than 12 finished pieces	5 00

TEXTILE FABRICS AND DOMESTIC MANUFACTURES—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Art Needle Work—For Professionals.		
Mrs. A. Hyson, Columbus O	Best display of not less than eight complete separate pieces, executed by the exhibitor.	$10 00
Same	Best table set, consisting of large table center, with eight plate doylies, and may be carried out on one fabric	8 00
Same	Best single specimen executed by the exhibitor	5 00
Margaret Hambling, Columbus, O	2d best single specimen executed by the exhibitor	3 00
China Painting—Amateur List.		
Mrs. W. W. Wight, Columbus, O	Best chocolate set	2 00
Mrs. Lawrence Brundage, Xenia, O.	2d best chocolate set	1 00
Same	Best ice cream set	2 00
M. E. Wiltberger, Columbus, O	2d best ice cream set	1 00
Mrs. Lawrence Brundage, Xenia, O	Best six cups and saucers	3 00
Mrs. W. W. Wight, Columbus, O	2d best six cups and saucers	2 00
Mrs. Lawrence Brundage, Xenia, O	Best six plates	3 00
Miss Manxie Ritter, Columbus, O	2d best six plates	2 00
M. E. Wiltberger, Columbus, O	Best plaque	2 00
Mrs. J. P. Weisman, Columbus, O	2d best plaque	1 00
Mrs. Lawrence Brundage, Xenia, O	Best lamp	2 00
M. E. Wiltberger. Columbus, O	2d best lamp	1 00
Virginia L. Kiser, Columbus. O	Best bon bon box	2 00
Alice M. Hipple, Delaware, O	2d best bon bon box	1 00
Virginia L. Kiser, Columbus, O	Best specimen of figure	2 00
Miss Elizabeth Leigh, Groveport, O	2d best specimen of figure	1 00
Miss Clara Ler, Columbus, O	Best specimen of china painting	2 00
Miss Elizabeth Leigh, Groveport, O	2d best specimen of china painting	1 00
Virginia L. Kiser, Columbus, O	Best specimen of gold paste	2 00
Mrs. O. L. Davis, Columbus O	2d best specimen of gold paste	1 00
Mrs. W. W. Wight, Columbus, O	Best salad dish	2 00
Alice M. Hipple, Delaware, O	2d best salad dish	1 00
Miss Manxie Ritter, Columbus, O	Best cake plate	2 00
Mrs. Lawrence Brundage, Xenia, O	2d best cake plate	1 00
Mrs. W. W. Wight, Columbus, O	Best tray	2 00
Virginia L. Kiser, Columbus, O	2d best tray	1 00
Same	Best vase	2 00
Mrs. J. P. Weisman, Columbus, O	2d best vase	1 00
Mrs. W. W. Wight, Columbus, O	Best display of china painting, not less than ten pieces	5 00
Miss Clara Ler, Columbus, O	2d best display of china painting, not less than ten pieces	3 00
Miss Manxie Ritter, Columbus, O	Best specimen Royal Worcester	2 00
Mrs. Lawrence Brundage, Xenia, O	2d best specimen Royal Worcester	1 00
China Painting—Professional List.		
Mrs. Laura Beaton, Columbus, O	Best specimen showing greatest originality and merit in design	4 00
Miss Alta Morris, Columbus, O	2d best specimen showing greatest originality and merit in design	2 00
H. W. Barnitz, Urbana, O	Best portrait	[illegible] 00
Miss Alta Morris, Columbus, O	2d best portrait	2 00
Josephine Klippart, Columbus, O	Best figure	4 00
Miss Alta Morris, Columbus, O	2d best figure	2 00
Helen B. Windle, Columbus, O	Best panel	3 00
Miss Alta Morris, Columbus, O	2d best panel	1 00
Same	Best plaque	3 00
Helen B. Windle, Columbus, O	2d best plaque	1 00
Miss Alta Morris, Columbus, O	Best large lamp	3 00
Mrs. Lura C. Davis, Columbus, O	2d best large lamp	1 00
Mrs. Ed. Mahon, Delaware, O	Best specimen conventional work	3 00
Mrs. Lura C. Davis, Columbus, O	2d best specimen conventional work	1 00
Alice Schille, Columbus, O	Best six cups and saucers	3 00
Mrs. Lura C. Davis, Columbus, O	2d best six cups and saucers	2 00
Same	Best six plates	3 00
Miss Alta Morris, Columbus, O	2d best six plates	2 00
Mrs. Lura C. Davis, Columbus, O	Best specimen enamel	2 00
Nora Prentice, Columbus, O	2d best specimen enamel	1 00
Mrs. Lura C. Davis, Columbus, O	Best specimen paste	2 00
Mrs. Ed. Mahon, Delaware, O	2d best specimen paste	1 00
Miss Alta Morris, Columbus, O	Best specimen metal	2 00
Mrs. Lura C. Davis, Columbus, O	2d best specimen metal	1 00
Miss Alta Morris, Columbus, O	Best course set	4 00
Mrs. Lura C. Davis, Columbus, O	2d best course set	2 00
Miss Alta Morris, Columbus O	Largest and finest display	8 00
Mrs. Lura C. Davis, Columbus, O	2d largest and finest display	5 00

PRESERVES, PICKLES, ETC.

Owner's Name and Postoffice.	Name of Article.	Amount.
Sadie E. Worley, Clarksville, O	Best canned tomatoes	$2 00
Mrs. W. H. Snedeker, Delaware, O	2d best canned tomatoes	1 00
Mrs. H. Bieber, Delaware, O	Best canned blackberries	2 00
Eva Carpenter, Columbus, O	2d best canned blackberries	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best canned raspberries	2 00
Eva Carpenter, Columbus, O	2d best canned raspberries	1 00
Mrs. N. D. Perry, Columbus, O	Best canned peaches	2 00
Mrs. S. B. McFarland, Sunbury, O	2d best canned peaches	1 00
Eva Carpenter, Columbus, O	Best canned pears	2 00
Mrs. A. W. Graham, Reynoldsburg, O	2d best canned pears	1 00
Mrs. H. Bieber, Delaware O	Best canned apples	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best canned apples	1 00
L. W. Gregg, Springboro, O	Best canned quinces	2 00
Mrs J. B. Taggart, Delaware, O	2d best canned quinces	1 00
Mrs S. B. McFarland, Sunbury, O	Best canned strawberries	2 00
Mrs. W. H. Snedeker, Delaware, O	2d best canned strawberries	1 00
Mrs. H. Bieber, Delaware, O	Best canned cherries	2 00
Mrs. L. Trimble, Delaware, O	2d best canned cherries	1 00
Mrs. N. D. Perry, Columbus, O	Best canned gooseberries	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best canned gooseberries	1 00
Mrs. W. H. Snedeker, Delaware, O	Best canned currants	2 00
Mrs. L. Trimble, Marion, O	2d best canned currants	1 00
Mrs. L. E. Davis, Zimmer, O	Best canned grapes	2 00
Mrs. L. Trimble, Marion, O	2d best canned grapes	1 00
Eva Carpenter, Columbus, O	Best canned plums	2 00
Mrs. L. Trimble, Marion, O	2d best canned plums	1 00
Mrs. Thos. Poole, Reynoldsburg, O	Best canned peas	2 00
Mrs. M. Rinehart, Marion, O	2d best canned peas	1 00
Eva Carpenter, Columbus, O	Best canned beans	2 00
Mrs. M. B. Clutter, Alexandria, O	2d best canned beans	1 00
Mrs. Victoria Flelds, Caledonia, O	Best canned rhubarb	2 00
Mrs. Lon W. Taggart, Lewis Center, O	2d best canned rhubarb	1 00
Mrs. Thos. Poole, Reynoldsburg, O	Largest and best variety canned fruit	5 00
Mrs. L. Trimble, Marion, O	2d largest and best variety canned fruit	3 00
Eva Carpenter, Columbus, O	Largest and best variety pickles	5 00
Mrs. Thos Poole, Reynoldsburg, O	2d largest and best variety pickles	3 00
Mrs. L. Trimble. Marion, O	Largest and best variety jellies	5 00
Mrs. Lillian Manship, Van Wert, O	2d largest and best variety jellies	3 00
Mrs. H. Bieber, Delaware, O	Best blackberry jelly	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best blackberry jelly	1 00
Mrs. L. Trimble, Marion. O	Best gooseberry jelly	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best gooseberry jelly	1 00
Mrs. Lon W. Taggart, Lewis Center, O	Best grape jelly	2 00
L. A. Weisman. Columbus, O	2d best grape jelly	1 00
Mrs. L. Trimble, Marion, O	Best plum jelly	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best plum jelly	1 00
Miss Mary Snedeker, Delaware, O	Best raspberry jelly	2 00
Mrs. L. Trimble, Marion, O	2d best raspberry jelly	1 00
Mrs. Victoria Fields. Caledonia, O	Best strawberry jelly	2 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best strawberry jelly	1 00
Mrs. Lillian Manship, Van Wert, O	Best apple jelly	2 00
Mrs. L. Trimble, Marion, O	2d best apple jelly	1 00
Mrs. M. Rinehart, Marion, O	Best pear jelly	2 00
Mrs. L. Trimble, Marion, O	2d best pear jelly	1 00
Mrs. M. B. Clutter, Alexandria, O	Best crabapple jelly	2 00
Mrs. H. Bieber, Delaware, O	2d best crabapple jelly	1 00
Clara Bieber. Delaware. O	Best currant jelly	2 00
Mrs. W. H. Snedeker, Delaware, O	2d best currant jelly	1 00
Miss Mary Snedeker, Delaware, O	Best peach jelly	2 00
Mrs. M. B. Clutter, Alexandria, O	2d best peach jelly	1 00
Mrs. J. B. Taggart, Deleware. O	Best quince jelly	2 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best quince jelly	1 00
Mrs. Thos. Poole, Reynoldsburg, O	Best preserved quinces	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best preserved quinces	1 00
Eva Carpenter, Columbus, O	Best preserved pears	2 00
Mrs. Maggie McCray, Reynoldsburg, O	2d best preserved pears	1 00
Mrs. Thos. Poole, Reynoldsburg, O	Best preserved apples	2 00
Clara Bieber, Delaware. O	2d best preserved apples	1 00
Eva Carpenter, Columbus. O	Best preserved plums	2 00
Clara Bieber, Delaware, O	2d best preserved plums	1 00
Sadie E. Worley, Clarksville, O	Best preserved grapes	2 00
Mrs. Thos. Poole, Reynoldsburg. O	2d best preserved grapes	1 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	Best preserved strawberries	2 00
Mrs. A. W. Graham, Reynoldsburg. O	2d best preserved strawberries	1 00
Same	Best preserved blackberries	2 00
Clara Bieber, Delaware, O	2d best preserved blackberries	1 00
Mrs. Mary F. Maxwell, Reynoldsburg. O	Best preserved peaches	2 00
Mrs. A. W. Graham, Reynoldsburg. O	2d best preserved peaches	1 00
Mrs. Thos. Poole, Reynoldsburg, O	Best preserved raspberries	2 00
Eva Carpenter, Columbus, O	2d best preserved raspberries	1 00

PRESERVES, PICKLES, ETC.—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Mrs. W. H. Snedeker, Delaware, O	Best preserved currants	$2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best preserved currants	1 00
Mary Stewart, Jacksontown, O	Best preserved gooseberries	2 00
Mrs. M. B. Clutter, Alexandria, O	2d best preserved gooseberries	1 00
Clara Bieber, Delaware, O	Best preserved cranberries	2 00
Mary Stewart, Jacksontown, O	2d best preserved cranberries	1 00
Eva Carpenter, Columbus, O	Best preserved melons	2 00
Mrs. L. Trimble, Marion, O	2d best preserved melons	1 00
Eva Carpenter, Columbus, O	Best tomato catsup	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best tomato catsup	1 00
Eva Carpenter, Columbus, O	Best cucumber catsup	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best cucumber catsup	1 00
Mrs. L. E. Davis, Zimmer, O	Best pickled cucumbers	2 00
Mrs. Carty, Columbus, O	2d best pickled cucumbers	1 00
Mrs. W. H. Snedeker, Delaware, O	Best pickled peaches	2 00
Mrs. E. G. Taggart, Lewis Center, O	2d best pickled peaches	1 00
Mrs. M. B. Clutter, Alexandria, O	Best pickled tomatoes	2 00
Mrs. Thos. Poole, Reynoldsburg, O	2d best pickled tomatoes	1 00
Clara Bieber, Delaware, O	Best pickled mangoes	2 00
Mrs. L. Trimble, Marion, O	2d best pickled mangoes	1 00
Clara Bieber, Delaware, O	Best pickled melons	2 00
Mary Stewart, Jacksontown, O	2d best pickled melons	1 00
Eva Carpenter, Columbus, O	Best pickled onions	2 00
Mrs. W. H. Snedeker, Delaware, O	2d best pickled onions	1 00
Mrs. M. B. Clutter, Alexandria, O	Best pickled gherkins	2 00
Mrs. A. W. Graham, Reynoldsburg, O	2d best pickled gherkins	1 00
Mrs. L. E. Davis, Zimmer, O	Best pickled cabbage	2 00
Mary Stewart, Jacksontown, O	2d best pickled cabbage	1 00
Mrs. L. Trimble, Marion, O	Best pickled cauliflower	2 00
Mrs. M. B. Clutter, Alexandria, O	2d best pickled cauliflower	1 00
Same	Best Chili sauce	2 00
Eva Carpenter, Columbus, O	2d best Chili sauce	1 00
Mrs. E. G. Taggart, Lewis Center, O	Best chow-chow	2 00
Mrs. H. Bieber, Delaware, O	2d best chow-chow	1 00

CEREAL FOODS.

Owner's Name and Postoffice.	Name of Article.	Amount.
Mary Stewart, Jacksontown, O.	Best one loaf domestic yeast bread	$2 00
Mrs. L. Trimble, Marion, O	2d best one loaf domestic yeast bread	1 00
Mrs. M. Elliott, Columbus, O	Best one loaf domestic salt rising bread	2 00
Clara Bieber, Delaware, O	2d best one loaf domestic salt rising bread	1 00
Mary Wolf, Columbus, O	Best domestic corn bread	2 00
Eva Carpenter, Columbus, O	2d best domestic corn bread	1 00
Mrs. M. Rinehart, Marion, O	Best domestic rye bread	2 00
Mary Wolf, Columbus, O	2d best domestic rye bread	1 00
Eva Carpenter, Columbus, O	Best domestic brown bread	2 00
Mrs. L. Trimble, Marion, O	2d best domestic brown bread	1 00
Mary Stewart, Jacksontown, O	Best domestic graham bread	2 00
Mary Wolf, Columbus, O	2d best domestic graham bread	1 00
Mrs. L. W. Taggart, Lewis Center	Best domestic layer cake	2 00
Eva Carpenter, Columbus, O	2d best domestic layer cake	1 00
Mrs. L. W. Taggart, Lewis Center, O	Best domestic white loaf cake	2 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best domestic white loaf cake	1 00
Mrs. Maggie McCleary, Reynoldsburg, O	Best domestic fruit cake	2 00
Mrs. J. B. Taggart, Delaware, O	2d best domestic fruit cake	1 00
Mrs. A. Miller, Pataskala, O	Best domestic marble cake	2 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	2d best domestic marble cake	1 00
Mrs. A. W. Graham, Reynoldsburg, O	Best domestic ornamented wedding cake	2 00
Mrs. Wm. Ritchey, Pataskala, O	2d best domestic ornamented wedding cake	1 00
Mrs. Mary F. Maxwell, Reynoldsburg, O	Best domestic raised biscuit	2 00
Mrs. L. E. Davis, Zimmer, O	2d best domestic raised biscuit	1 00

FINE ARTS—H. S. GRIMES, Member in charge.

DRAWINGS, PAINTINGS, ETC.

Owner's Name and Postoffice.	Name of Article.	Amount.
Professional List.		
Henrietta Wilson, Cincinnati, O	Best life-size portrait, in oil, from sittings only	$10 00
H. W. Barnitz, Urbana, O	Best life-size portrait, in oil. from photograph or other picture	5 00
Herman Baker, Columbus, O	Best original painting, in oil, of horse, bull or cow, the entire animal, not the head only	10 00
Henrietta Wilson, Cincinnati, O	Best landscape from nature in oil	10 00
Mrs. C. B. Ingraham, Indianapolis, Ind	Best specimen fruit, flower or object painting in oil, original	5 00
Gwynne C. Price, Chicago, Ill	Best figure piece, in oil	5 00
Same	Best exhibition of paintings, in oil, five or more pieces	20 00
H. W. Barnitz, Urbana, O	Best life-size portrait, in water colors (free hand)	10 00
Herman Baker, Columbus, O	Best landscape from nature, water colors	10 00
Emma L. Bryan, Columbus, O	Best specimen fruit, flower or object painting, in water colors (original)	5 00
Gwynne C. Price, Chicago, Ill	Best exhibition of paintings, water colors, five or more pieces (original)	15 00
Same	Best free hand crayon drawing (black and white). from copy, not traced from photograph or negative	5 00
Mrs. C. B. Ingraham, Indianapolis, Ind	Best portrait in free hand (black and white), stump drawing from copy	5 00
Oil Painting—Amateur List.		
Vera Inez Luse, Columbus, O	Best portrait copied from photograph, not traced	5 00
Blanche Browne, Columbus, O	Best specimen painting, from copy	3 00
Belle Havens, Newark, O	Best landscape from nature	5 00
Vera Inez Luse, Columbus, O	Best landscape from copy	3 00
Alice Schille, Columbus O	Best figure (original)	3 00
Mrs. Bitzer, Columbus, O	Best fruit, flower or object painting (original)	5 00
Alice M. Hipple, Delaware, O	Best fruit, flower or object painting from copy	3 00
Same	Best three-panel screen	3 00
Mrs. S. E. Butt, Nelsonville, O	Best single-panel screen	2 00
Frances A. Bryant, Springfield, O	Best landscape painted on satin	3 00
Alice Schille, Columbus, O	Best exhibition of paintings, five or more pieces	8 00
Water Colors—Amateur List.		
Carrie Van Sant, Delaware, O	Best portrait from photograph	5 00
Same	Best figure piece from copy	3 00
Alice Schille, Columbus, O	Best landscape from nature	5 00
Belle Havens, Newark, O	Best landscape from copy	3 00
Alice Schille, Columbus, O	Best fruit or flower painting, from nature	5 00
Mrs. Lawrence Brundage, Xenia, O	Best fruit or flower painting, from copy	3 00
Benj. W. Warden, Columbus, O	Best still life (original)	5 00
Mrs. C. B. Ingraham, Indianapolis, Ind	Best five original designs for wall paper	3 00
Alice Schille, Columbus, O	Best exhibition of paintings, five or more pieces	8 00
Drawing—Amateur List.		
Mrs. Bitzer, Columbus, O	Best shaded charcoal drawing from object	3 00
Same	Best shaded stump drawing from copy or object	3 00
Belle Havens, Newark, O	Best shaded brush drawing from object or nature	3 00
Benj. W. Warden, Columbus, O	Best free hand shaded pen drawing	3 00
Alice Adams, Columbus, O	Best sketch of landscape from nature, in pencil, charcoal, crayon or brush	3 00
Benj. W. Warden Columbus, O	Best five character etchings	3 00
Mrs. A. C. Bennett, Westerville, O	Best original illustrations of a popular poem, in black ond white, not less than five drawings	3 00
Mrs. Bitzer, Columbus, O	Best display of drawings by individual	5 00
Pastel Drawing.		
Gwynne C. Price, Chicago, Ill	Best landscape from nature	5 00
Same	Best figure piece (original)	5 00
Mrs. Lawrence Brundage, Xenia, O	Best figure piece (from copy)	3 00
Emma L. Bryant, Columbus, O	Best still life (original	3 00
Same	Best fruit or flower drawing	3 00
Frances A. Bryant, Springfield, O	Best drawing of animal or game (original)	3 00
H. W. Barnitz, Urbana, O	Best portrait copied from photo and finished from sittings	5 00

FINE ARTS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amount.
Wood Carving.		
Alice M. Hipple, Delaware, O.	Best large screen	$5 00
Kate Wilson, Cincinnati, O.	Best specimen	3 00
School Work.		
C. M. Lehr, township superintendent, Akron, O.	Gen. work from a village or district school...	SilMed

AGRICULTURAL IMPLEMENTS, MACHINERY, ETC.

C. BORDWELL, Member in Charge.

Ackerson, Mrs. Huldah, Westerville, O.	Royal cleansing fluid, for clothing, carpets, etc.
Akron Cultivator Co., Akron, O.	Sulky cultivators.
Amstutz, Peter B., Bluffton, O	Wooden forks, for handling clover, straw and hay.
Ashland Manufacturing Co., Ashland, O.	Force pumps and hay carrier.
A. T. Harrow Co., Millerstown, Pa.	Spring tooth A. T. wheel barrow
Bateman Manufacturing Co, Greenlock, N. J.	Cultivators and garden tools.
Bartlett, C. O. & Co., Cleveland, O.	Feed mills and general milling machinery.
Bennett, H. S. & Co., Westerville, O.	Stump puller, ditching machine, corn harvester, wagon.
Bickford, Huffman & Co., Macedon, N. Y	Grain drills.
Brewer, J. T., Bloomington, Ill.	Hydraulic cider press.
Brick & Metal Fence Co., Lancaster, O.	Metal fence.
Bradley, C., Columbus, O.	Agricultural implements.
Brown Manufacturing Co., Zanesville, O	Wagons, cultivators, harrows.
Brown-Manley Plow Co., Malta, O.	Agricultural implements, plows, harrows, etc.
Cedar Rapids Pump Co., Cedar Rapids, Iowa.	Pumps.
Champion Wagon Co., Owego, N. Y.	Grain drills and wagons.
Chase Pump and M'f'g Co., Columbus, O	Pumps.
Cherry Manufacturing Co., Knoxville, Iowa.	Feed and litter carrier.
Chicago Scale Co., Chicago, Ill.	Chicago U. S. standard scale.
Cleveland Dryer Co., Cleveland, O.	Fertilizers.
Clyde Truck Scale Co., Clyde, O.	Truck scales.
Collins Plow Co., Quincy, Ill.	Eli hay presses.
Columbus Machine Co., Columbus, O.	Brown gas and gasoline engine and pump.
Coquillard Wagon Works, Newark, O.	Wagons.
Creamery Package M'f'g Co., Chicago, Ill.	Creamery supplies.
Deeds, Reuben, Ansonia, O.	Barn door latch.
Deere and Mansur, Moline, Ill.	Farm implements, hay rake, disc harrow, corn planter.
Delaval Cream Separator Co., New York, N. Y.	Cream separators.
Eclipse Hay Press Co., Kansas City, Mo.	Hay press.
Empire Drill Co., Louisville, Ky.	Grain drills.
Eureka Mower Co., Utica, N. Y.	Eureka mower, corn harvester, corn planters.
Evans, A. C. M'f'g Co., Springfield, O.	Harrows.
Foos Manufacturing Co., Springfield, O.	Scientific feed grinders, scientific, Buckeye and Illinois corn harvesters.
Flatt, J. S., Camp Chase, O.	Agricultural implements.
Fleming Manufacturing Co., Fort Wayne, Ind.	Fleming stone crusher, Fort Wayne, steel reversible road machine.
Flint, Walling & Co., Kendallville, Ind.	Wind engines.
Forte, J. B. & Co., Fredericktown, O.	Patent wrench and wagon jack.

Geiser Manufacturing Co., Waynesboro, Pa	Peerless engines, peerless threshers peerless saw mill.
Good Roads Machine Co., Canton, O	Aultman stone crusher, Buckeye and Champion road machines.
Hardman & Turley, Orleans, Ind	King corn harvester.
Haworth & Sons, Decatur, Ill	Haworth corn planter.
Hench & Drumgold, York, Pa	Hench & Drumgold drill, spring-tooth harrows.
Heller, Aller & Co., Napoleon, O	Baker wind engines, pirate wind engine.
Hoosier Drill Co., Richmond, Ind	Hoosier drills, hay rakes, corn planters.
Hoover, Prout & Co., Avery, O	Hoover potato digger.
Hydraulic Press M'f'g Co., Mt. Gilead, O	Hydraulic cider press.
Immel, John & Son, Columbus, O	Studebaker wagons.
Indiana Road Machine Co., Fort Wayne, Ind	Road machine.
Jarecki Chemical Co., Sandusky, O	Fertilizers.
John Deere & Co., Moline, Ill	A full line of agricultural implements.
Kansas City Hay Press Co., Kansas City Mo	Lightning hay press.
Kerns Bros., Amanda, O	Pride of America faning mills.
Keystone Manufacturing Co., Sterling, Ill	Keystone husker, shredder, corn shellers, corn planters.
Layton, Beery & Co., Upper Sandusky, O	Champion grinder, Ohio grinder.
Lockart, J. S., Bellefontaine, O	Steam boiler scaler.
Long, D. L., Columbus, O	Window lock.
Long & Alstatter, Co., Hamilton, O	Excello cultivator, tongueless cultivators, standard disc harrow.
Loudenback Fertilizer Co., Urbana, O	Fertilizers.
Mast, P. P. & Co., Springfield, O	Buckeye grain drills, Buckeye cultivator, Buckeye cider presses.
Mast, Foos & Co., Springfield, O	Imperial wind mills, Columbia wind mill, Buckeye force pumps, Buckeye feed grinder, Mascot and Buckeye lawn mowers.
Main, H. B., Delaware, O	Stock watering trough.
McNamar, J. J. D., Newark, O	McNamar traction engine.
McSherry Mfg. Co., Middletown, O	McSherry grain drills.
Milwaukee Hay Tool Co., Milwaukee, Wis	Milwaukee corn husker.
Moline Plow Co., Moline, Ill	Flying Dutchman plows, Champion corn planter, Cracker Jack corn planter, Play Ball corn planter, Planters Friend corn planter, cultivators.
Myers, F. E. & Bro., Ashland, O	Pumps.
Nelson, Morris & Co., Chicago, Ill	Fertilizers and meats.
Novelty Mfg. Co., Rock Island, Ill	Wind mill regulators, disc sharpeners.
Ohio Cultivator Co., Bellevue, O	Columbia disc harrows, Ohio roller, Ohio cultivators.
Ohio Corn Husker Co., Middletown, O	Corn husker.
Ohio Farmers' Fertilizer Co., Columbus, O	Fertilizers.

Ohio Rake Co., Dayton, O	Quail rakes, tedders, disc harrows, Ohio hay loader, Bulls-Eye corn planter, drill planter, U. B. harrow, Little Giant corn sheller.
Ohlen, Jones & Son, Saw Mfg. Co., Columbus, Ohio	Circular saws.
Oliver Chilled Plow Co., South Bend, Ind	Oliver gang plow, Oliver sulky plow, Oliver walking plows.
Orrville Machine Co., Orrville, O	New Champion grain threshing machine.
Osborn, D. M. & Co., Columbus, O	Columbia binder, Columbia mower, Columbia corn harvester, Osborn all steel hay rakes, Columbia disc harrows.
Parlin & Orendorf Co, Canton., Ill	Canton riding cultivator, Canton corn planter, Canton corn planter, jr., Volunteer cultivators, disc harrows.
Potts Machinery Co., Columbus, O	Gasoline engine.
Perkins Wind Mill C., Mishawaka, Ind	Perkins wind mills.
Potato Implement Co., Traverse City, Mich	Hand potato tools.
Princess Plow Co., Canton, O	Wickman's tubular land roller.
Prouty, F. D., Columbus, O	Champion hay presses, Aultman & Taylor thresher.
Robinson & Co., Richmond, Ind	Bricker's automatic duplex hay baler and traction engine.
Rock Island Plow Co., Rock Island Ill	Rock Island hay loader, Rock Island corn planter, Rock Island sulky plow, Rock Island spike-toothed harrow, Defiance disc harrow, "Blue Ribbon" cultivators, Good Luck cultivators, T. & S. walking breaking plows, Governor plows.
Rock Plaster Mfg. Co., Columbus, O	Rock plaster.
Roderick Lean Mfg. Co., Mansfield, O	Steel harrows, disc harrow, Champion roller.
Rogers Iron Co., Springfield, O	Gasoline engines.
Russels, A. J., North Baltimore, O	Farm gate.
Safety Corn Husker Co., Indianapolis, Ind	Safety self feed husker and shredder.
Sandwich Mfg. Co., Sandwich, Ill	Southwick hay press, American hay press, shellers.
Scheidler Machine Co., Newark, O	Traction engine.
Schrock, M. E., Columbus, O	Whipple trees, single trees, etc.
Sechler, D. M., Carriage Co., Moline, Ill	"Black Hawk" corn planter.
Showver, John L., Bellefontaine, O	Barn model.
Shoemaker, E. H., Columbus, O	Paints.
Shunk Plow Co., Bucyrus, O	Plows, handy wagon.
Smith & Miller, Columbus, O	Washing machine.
Smith & Pomeroy, Kalamazoo, Mich	Eureka wind mills.
Snider, E. H., Clinton, Iowa	Garden King rake.
South Bend Chilled Plow Co., South Bend, Ind	Hammock cultivator, Queen walking plows, Casady sulky plows.

Spencer, J. A., Dwight, Ill	Spencer hay press.
Standard Corn Husker Co., Greenspring, O	Standard corn huskers.
Star Manufacturing Co., New Lexington, O	Star feed grinders.
Stevens & Son., Auburn, N. Y	Stevens corn husker.
Stoddard Mfg. Co, Dayton, O	Tiger disc harrow, Tiger planters, Tiger cultivators, Tiger hay tedder, rakes.
Superior Drill Co., Springfield, O	Disc harrows, Buckeye cider mill, grain drills.
Taylor & Downs Co., Columbus, O	Oswego wagons, Champion wagons, Oswego drills, Hayes corn planters, Dain corn harvesters, Star land roller.
The H. P. Deuscher Co., Hamilton, O	Hamilton corn planters, harrows.
The Universal Electric Works, Columbus, O	Dynamo and motors.
The Whitman and Barnes Manufacturing Co., Cincinnati, O	Hardware specialties.
Thomas Manufacturing Co., Springfield, O	Superior grain drills, bicycles, Majestic lawn mowers, Reliable hay rakes, hay tedder, Thomas disc harrows.
Troy Wagon Works, Troy, O	Troy wagons.
Vermont Farm Machine Co., Bellows, Falls, Vt.	Dairy goods.
Warren Evaporator Works, Warren, O	Warren sugar evaporator.
Wayne Agricultural Works, Richmond, Ind	Richmond Champion grain drills, Richmond Champion corn planters, road carts, delivery wagons, buggies.
Weber, Turner & Co., Springfield, O	Stoves.
Western Union Chemical Co., Cleveland, O	Fertilizers.
White, J. A., Oxford, O	Mop pail and wringer.
Whitman Agricultural Co., St. Louis, Mo	Steam hay press, horse power hay presses.
Wood & Barnes, Williamsport, O	Journal bearing wagon and bicycle.
Woodcock Foundry and Machine Works, Chillicothe, O	Ohio feed grinder, Champion feed grinder.
Beekly Midway Wire Lightener, Greenville, O.	Wire stretcher.
Bowen Cable Stay Fence Machine Co., Norwalk, O	Fencing.
Buchonan Fence Co , Smithville, O	Wire fencing.
Carter Wire Fence Machine Co., Mt. Sterling, O.	Fencing.
Carpenter's Wire Fence Lightener, Enterprise, O	Fence stretcher.
Clark Fence Co., Greenville, O	Steel fencing.
Combination Fence, Derby, O	Fencing.
Crescent Metallic Fence Stay Co., Covington, O.	Fencing.
Cyclone Woven Wire Fence Co., Holly, Mich	Wire fence.
Chain Stay Fence Co., Tontogany, O	Fencing.
Eureka Fence Co., Richmond, Ind	Fencing.
Frost Woven Wire Fence Co., Cleveland, O	Fencing.
Farmers' Friend Fence Machine, Dayton, O	Fence machine.
Gilbert & Duff Co., Cleveland, O	Wire fencing.
Holmes & Ward Bros., Cadiz, O	Wire fence and machine.
Iron Clamp Fence Stay Co., Xenia, O	Fence.

Jones Fence Co., The, Columbus, O	Fencing.
Kitselman Bros., Ridgeville, Ind	Wire fencing.
Kokomo Fence Machine Co., Kokomo, Ind	Fencing.
Lamb Wire Fence Co., Adrian, Mich	Fencing.
McCallip Fence and Wire Works, Columbus, O.	Fencing.
Norwalk Lock Stay Fence Co., Norwalk, O	Fencing.
Page Woven Wire Fence Co, Adrian, Mich	Woven wire fence.
Parish, Wm. N., Richmond, Ind	Fence machine.
Russels, A. J., North Baltimore, O	Farm gate.
Schauck and Owen, Delaware, O	Fencing.
Shimer Woven and Wire Fence Co., New Castle, Ky	Fencing.
Smith, C. F., Broadway, O	Fencing.
Thomas, J. F., Rushville, O	Farm gate.
Thorman Bros. and Paschol, Leonardsburg, O.	Fencing.
The Chaplin Fence Machine, Burr Oak, Ind	Fencing.
Variety Iron Works, Columbus, O	Iron fencing.
Warne, Frank H., Morenci, Mich	Fencing and machine.
Wilkes, J. C., Athens, O	Wire fence stretcher.
Wilmarth Fence Machine Co., Detroit, Mich	Fence machine.
Withington and Co., Adrian, Mich	Fencing.

MERCHANTS' AND MANUFACTURERS' PRODUCTS.

E. C. ELLIS, Member in Charge.

Schoedinger, Fearn & Co., Columbus, O	Heating and cooking stoves.
Columbus Bicycle Co., Columbus, O	Columbus bicyles.
James Plenkharp & Co., Columbus, O	Patent trucks etc.
John R. Tilton, Columbus, O	Patent automatic tire cure.
Columbus Brass & Closet Co., Columbus, O	Special appliance for water and steam.
James Ohlen Sons, Columbus, O	Saws, etc.
M. B. Lefever, Edison, O	Grave markers.
Excelsior Seat Co., Columbus, O	Seats, bodies, etc.
J. C. Sherwood & Co., Columbus, O	Bicycles and supplies.
Bradley, Munk & Co., Columbus, O	Stoves and kitchen supplies.
The Kernan Furnace Co., Utica, N. Y	Patent heating furnace.
The Hart & Crouse Co., Utica, N. Y	Hot air and steam heaters.
The Buckeye Saw Co., Columbus, O	Saws.
J. H. and F. A. Sells, Columbus, O	Light and heavy harness, etc.
M. Hertenstein & Co., Columbus, O	Stoves, etc.
Roderick & Stephenson, Columbus, O	Allen patent heater for natural gas.
Columbus Vehicle Co., Columbus, O	Fine light traps.
The Scioto Buggy Co., Columbus, O	Buggies, surreys and phaetons.
The Columbus Buggy Co., Columbus, O	Buggies, surreys and phaetons, etc.
The Buckeye Buggy Co., Columbus, O	Buggies, surreys, phaetons and tally-ho coach.
The U. S. Carriage Co., Columbus, O	Coaches, hearses and funeral car.
John Immel & Son., Columbus, O	Buggies, phaetons and delivery wagons.
The Peabody Buggy Co., Fostoria, O	Buggies, phaetons and surreys.
The Union City Carriage Co., Union City, Ind.	Buggies, phaetons and surreys.

The Westcott Carriage Co., Richmond, Ind.	Buggies, phaetons and surreys.
The Climax Buggy Co., Columbus, O.	Buggies, phaetons and surreys.
The Galion Buggy Co., Galion, O.	Buggies, phaetons and surreys.
The Central Ohio Buggy Co., Galion, O.	Buggies, phaetons and surreys.
The Ohio Graphophone Co., Columbus, O.	Graphophones, etc.
The Myriadoscope Co., Chicago, Ill.	Myriadoscopes.

MERCHANDISE, MUSIC, ETC.

E. C. Ellis, Member in Charge.

McAllister, Mohler & Co., Columbus, O.	Furniture.
Howard & Co., Columbus, O	Furniture, carpets and curtains.
Columbus Cabinet Co., Columbus, O.	Furniture.
Sears & Nichols, Chillicothe, O.	Canned goods.
Champion Steel Range Co., Cleveland, O.	Steel ranges, gasoline stoves.
Hallowood Cash Register Co., Columbus, O.	Cash registers.
National Cash Register Co., Dayton, O.	Cash registers.
J. H. Goodin	Shells.
Max Rieser, Columbus, O.	Jewelry.
J. I. Goldsmith, Columbus, O.	Handkerchiefs, embroidery.
N. A. Mellich, Columbus, O.	Spoons.
The A. C. Evans Manufacturing Co., Springfield, O.	Rugs, loom.
M. Young	Wire jewelry.
J. A. Lidball, Columbus, o.	Pictures.
M. W. Westlake, Columbus, O.	Glass engraving.
J. O. Williams, Columbus, O.	Patent kitchen sink.
The Hockett-Puntenny Co. Columbus, O.	Pianos.
W. G. Pierce, Columbus, O.	Mandolins, guitars.
Simpson Iron Co., Columbus, O.	Novelties.
N. E. Lovejoy, Columbus, O.	Violins.
R. L. Watson, Columbus, O.	Revolving window sash.
W. S. Lazerus, Columbus, O.	Patent churn dash.
G. W. Lalley, Kansas City, Mo.	Patent tops, etc.
J. A. Burgess, St. Louis, Mo.	Emery stones, India pencils.
Caren & O'Neil, Columbus, O.	Dry goods, cloaks, etc.
Cherrington Printing and Engraving Co., Columbus, O.	Typewriters, medals, badges, etc
J. A. Cressey, Columbus, O.	Yeast.
F. L. Wirschinger, Columbus, O.	Jewelry.
A. L. Baker, Columbus, O.	Bicycles.
Elliott Bakery Co., Columbus, O.	Cakes, candies, etc.
United Salt Co., Cleveland, O.	Buckeye salt.
Children's Home Society, Columbus, O.	Pictures and testimonials.
H. Grabooski, Put-in-Bay, O.	Spectacles, jewelry.
Buckeye Paste Co., Columbus, O.	Paste.
K. B. Mathes, St. Joseph, Mich.	Shells, etc.
H. L. Karte, Agent, Columbus, O.	Dougherty typewriter.
Ohio Supply Co., Agent, Columbus, O.	Blickensderfer typewriter.
High Street Laundry, Columbus, O.	Display of laundryed goods.
Briening and Wurst, Cincinnati, O.	Kitchen novelties.
F. M. Kirby & Co., Columbus, O.	Ten cent goods.

ABSTRACTS FROM REPORTS OF COUNTY AGRICULTURAL SOCIETIES FOR 1897.

TABLE I—COUNTY FAIRS IN OHIO FOR 1897.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Adams	W. K. Coleman	West Union	Henry Scott	West Union.
Allen	Henry C. Adgate	Lima	E. W. Enslen	Elida.
Ashtabula	W. H. Brown	Geneva	L. M. Cornwell	Jefferson.
Athens	N. W. Baker	Athens	Winfield S. Scott	Athens.
Auglaize	J. T. Van Horn	New Hampshire	Frank Rigdon	Uniopolis.
Belmont	A. C. Darrah	St. Clairsville	E. G. Amos	St. Clairsville.
Brown	V. K. Thompson	Georgetown	Ben B. Whiteman	Georgetown.
Butler	J. A. Slade	Hamilton	W. B. Wallace	Oxford.
Carroll	James A. Lee	Harlem Springs	Thomas J. Saltsman	Carrollton.
Champaign	C. H. Ganson	Urbana	H. P. Wilson	Urbana.
Clark	E. W. Kanders	Lawrenceville	J H. Gurlough	Pitchin.
Clermont	Bennett Behymer	Locust Corner	J. O. Rapp	Owensville.
Columbiana	Lee Deemer	Lisbon	B. Y. Brown	Gavers.
Coshocton	Ed. M. Hanlon	Coshocton	Corwin McCoy	Coshocton.
Crawford	E. B. Monnett	Bucyrus	M. J. Monnett	Bucyrus.
Cuyahoga	L. R. Dunham	Newburg	William Rodgers	Chagrin Falls.
West Cuyahoga	Wm. Biddulph	Dover	W. J. Poots	Strongsville.
Darke	J. M. Brown	Delisle	Ed. Ammon	Gordon.
Defiance	Not reported			
Delaware	Not reported			
Erie	C. W. Taylor	Sandusky	George R. Prout	Sandusky.
Fairfield	T. J. Barr	Amanda	C. B. Whiley	Lancaster.
Fayette	B. H. Millikan	Washington C. H.	H. D. Pursell	Washington C. H.
Fulton	L. G. Ely	Fayette	G. W. Howard	Winameg.
Geauga	Chas. Hall	East Claridon	H. C. Tuttle	Burton.
Greene	J. W. Pollock	Cedarville	P. L. Magruder	Xenia.
Guernsey	A. J. Clark	Cambridge	R. S. Frame	Washington.
Hamilton	Chas. G. Mitchell	Wyoming	Wm. H. Blair	Madisonville.

Hancock	W. A. Williamson	Mt. Cory	J. G. Hull	Findlay.
Hardin	W. F. Hufford	Ada	A. M. Rice	Kenton.
Harrison	A. D. McGuire	Cadiz	Samuel Hamilton	Cadiz.
Henry	Not reported			
Highland	S. P. Scott	Hillsboro	W. H. Haley	Hilisboro.
Holmes	A. W. Logsdon	Millersburg	W. G. Rudy	Millersburg.
Huron	A. Sherman	East Townsend	W. N. Perrin	Norwalk.
Jackson	Not reported			
Jefferson	I. S. Vale	Smithfield	Chas. McKinney	Smithfield.
Lake	Not reported			
Lawrence	J. P. Eaton	Labelle	J. W. Rucker	Proctorville.
Licking	B. N. Sigler	Homer	A. J. Crilly	Newark.
Logan	L. H. Pool	Degraff	Chas. L. Rogers	Degraff.
Lorain	J. L. Reed	North Ridgeville	J. E. Willard	Elyria.
Madison	Charles A. Wilson	Summerford	M. L. Rea	London.
Mahoning	S. D. L. Jackson	Youngstown	S. A. Fogg	Canfield.
Marion	Albert Osborn	Marion	S. N. Titus	Marion.
Medina	E. S. Bissell	Leroy	A. T. Spitzer	Medina.
Meigs	P. B. Stanbery	Pomeroy	John McQuigg	Pomeroy.
Mercer	S. H. Weaver	Early	J. M. Winter	Celina.
Miami	T. S. Scott	Troy	John A. McCurdy	Troy.
Monroe	W. C. Mooney	Woodsfield	W. C. Mooney	Woodsfield.
Morgan	John G. Walker	McConnelsville	J. W. McElhiney	McConnelsville.
Morrow	C. D. Russell	Mt. Gilead	J. G. Russell	Mt. Gilead.
Muskingum	S. A. Baldwin	Zanesville	J. E. Tanner	Zanesville.
Noble	W. S. Spriggs	Sarahsville	C. L. Hellyer	Sarahsville.
Ottawa	G. W. Sloan	Port Clinton	F. W. Camper	Port Clintou.
Paulding	J. S. Slagler	Paulding	W. B. Jackson	Paulding.
Perry	T. J. Tracy	New Lexington	Patrick Coyle	New Lexington.
Portage	C. R. Doolittle	Streetsboro	C. H. Laubert	Ravenna.
Preble	J. C. Anderson	Camden	C. F. Brook, Jr	Eaton.
Putnam	A. L. Paul	Ottawa	C. H. Rice	Ottawa.
Richland	Jerry Needham	Lexington	John Hale	Pavonia.
Ross	Clark W. Story	Chillicothe	Theo. Spetnagel	Chillicothe.
Sandusky	William J. Smith	Fremont	H. C. Plagman	Fremont.
Scioto	James S. Kelton	Portsmouth	H. F. Thompson	Portsmouth.
Shelby	H. Guthrie	Sidney	E. F. Duncan	Sidney.
Stark	C. M. Welty	North Industry	H. A. Wise	Canton.
Summit	L. S. Ebright	Akron	George W. Brewster	Akron.
Trumbull	S. F. Bartlett	Warren	O. D. Morgan	Warren.

COUNTY FAIRS IN OHIO FOR 1897—Continued.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Tuscarawas	S. Humerickhouse	New Philadelphia	V. Wentz	Canal Dover.
Union	John K. Dodge	New California	C. S. Chapman	Marysville.
Van Wert	J. S. Stuckey	Van Wert.	E. B. Gilliland	Van Wert.
Vinton	Not reported			
Warren	Huse Bone	Lebanon	F. M. Cunningham	Lebanon.
Washington	F. G. Best	Marietta	J. H. McConnell	Marietta.
Wayne	E. G. Ebright	Shreve	W. A. Wilson	Wooster.
Wood	Frank Powell	Perrysburg	E. B. Beverstock	Tontogany.
Wyandot	S. B. Gillet	Carey	Henry Kear	Upper Sandusky.

COUNTY FAIRS IN OHIO FOR 1897 WITH TIME AND PLACE.

County.	Secretary.	Postoffice.	Time of fair.	Place of fair.
Adams	T. W. Ellison	West Union	Sept. 7, 8, 9 and 10	West Union
Allen	T. B. Bowersock	Lima	Sept. 14, 15, 16 and 17	Lima.
Ashtabula	Chas. C. Babcock	Jefferson	Sept. 21, 22, 23 and 24	Jefferson.
Athens	D. M. Burchfield	Athens	Aug. 24, 25 and 26	Athens.
Auglaize	M. J. Crawford	Wapakoneta	Sept. 28, 29, 30 and Oct. 1	Wapakoneta.
Belmont	T. C. Ayers	St. Clairsville	Sept. 1, 2 and 3	St. Clairsville.
Brown	J. W. Hedrick	Russellville	Oct. 5, 6, 7 and 8	Georgetown.
Butler	W. C. Hunter	Hamilton	Oct. 4, 5, 6, 7 and 8	Hamilton.
Carroll	C. A. Tope	Carrollton	Sept. 28, 29, 30 and Oct. 1	Carrollton.
Champaign	J. W. Crowl	Urbana	Aug. 17, 18, 19 and 20	Urbana.
Clark	Wm. Jenkins	Seth	Aug. 24, 25, 26 and 27	Springfield.

Clermont	John Rowan	Blowville	Sept. 6, 7, 8, 9 and 10	Bost'n(Owensv'le P.O.)
Columbiana	E. F. Moore	Lisbon	Sept. 13, 14 and 15	Lisbon.
Coshocton	Robert Boyd	Coshocton	Oct. 12, 13, 14 and 15	Coshocton.
Crawford	B. Beal	Bucyrus	Sept. 21, 22, 23 and 24	Bucyrus.
Cuyahoga	Geo. B. Huggett	Chagrin Falls	Sept. 7, 8, 9 and 10	Chagrin Falls.
West Cuyahoga	C. H. Busby	Berea	Sept. 14, 15 and 16	Berea.
Darke	F. M. Eidson	Greenville	Aug. 23, 24, 25, 26 and 27	Greenville.
Defiance	Not reported			
Delaware	Not reported			
Erie	John T. Mack	Sandusky	Sept. 21, 22, 23 and 24	Sandusky.
Fairfield	W. T. McClenaghan	Lancaster	Oct. 13, 14, 15 and 16	Lancaster.
Fayette	N. B. Hall	Washington C. H	Aug. 10, 11, 12 and 13	Washington C. H.
Fulton	Thomas Mikesell	Wauseon	Sept. 21, 22, 23 and 24	Wauseon.
Geauga	P. W. Parmelee	Burton	Sept. 14, 15, 16 and 17	Burton.
Greene	R. R. Grieve.	Xenia	Aug. 17, 18, 19 and 20	Xenia.
Guernsey	V. D. Craig	Washington	Sept. 28, 29, 30 and Oct. 1	Washington.
Hamilton	D. L. Sampson	Silverton	Aug. 17, 18, 19 and 20	Carthage.
Hancock	J. J. Cole	Findlay	Sept. 22, 23, 24 and 25	Findlay.
Hardin	F. H Rummell	Ada	Sept. 7, 8, 9 and 10	
Harrison	J. C. Glover	Cadiz	Sept. 29, 30 and Oct. 1	Cadiz.
Henry	Not reported			
Highland	H. L. Wiggins	Hillsboro		Hillsboro.
Holmes	G. F. Gilbert	Millersburg	Sept. 28, 29, 30 and Oct. 1	Millersburg.
Huron	J. I. Kibby	Norwalk	Sept. 7, 8, 9 and 10	Norwalk.
Jefferson	J. O. Hayne	Smithfield	Sept. 22, 23 and 24	Smithfield.
Lake	Not reported			
Lawrence	W. W. Reckard	Proctorville	Sept. 8, 9 and 10	Proctorville.
Licking	Ad. C. Seymour	Newark	Aug. 24, 25, 26 and 27	Newark.
Logan	Banner M. Allen	Bellefontaine	Sept. 28, 29, 30 and Oct. 1	Bellefontaine.
Lorain	W. B. Johnston	Elyria	Sept. 21, 22, 23 and 24	Elyria.
Madison	E. B. Pancake	London	Sept. 7, 8, 9 and 10	London.
Mahoning	J. H. Ruhlman	Youngstown	Sept. 28, 29 and 30	Canfield.
Marion	J. E. Waddell	Marion	Sept. 28, 29, 30 and Oct. 1	Marion.
Medina	Hiram Goodwin	Medina	Sept. 7, 8 and 9	Medina.
Meigs	H. C. Fish	Pomeroy	Sept. 14, 15, 16 and 17	Rockspring.
Mercer	C. W. Halfhill	Mercer	Aug. 17, 18, 19 and 20	Celina.
Miami	W. I. Tenney	Troy	Sept. 27, 28, 29, 30 and Oct. 1	Troy.
Monroe	George P. Dorr	Woodsfield	Aug. 31 and Sept. 1 and 2	Woodsfield.
Morgan	M. E. Danford	McConnelsville	Sept. 1, 2 and 3	McConnelsville.
Morrow	O. J. Miller	Mt. Gilead	Oct. 5, 6, 7 and 8	Mt. Gilead.

COUNTY FAIRS IN OHIO FOR 1897, WITH TIME AND PLACE—Concluded.

County.	Secretary.	Postoffice.	Time of Fair.	Place of Fair.
Muskingum	J. D. Mercer	Zanesville	Sept. 7, 8, 9 and 10	Zanesville.
Noble	Arthur McWilliams.	Sarahsville	Sept. 22, 23 and 24	Sarahsville.
Ottawa	J J. Ineichen	Port Clinton	Aug. 25, 26 and 27	Port Clinton.
Paulding	George P. Hardy	Paulding	Sept. 14, 15, 16 and 17	Paulding.
Perry	Chas. C. Chappelear	New Lexington	Sept. 14, 15, 16 and 17	New Lexington.
Portage	Lafayette Smith	Ravenna	Sept. 21, 22, 23 and 24	Ravenna.
Preble	Henry H. Farr	Eaton	Sept. 27, 28, 29, 30 and Oct. 1	Eaton.
Putnam	A. P. Sandles	Ottawa	Oct. 5, 6, 7 and 8	Ottawa.
Richland	W. H. Gifford	Mansfield	Sept. 7, 8, 9 and 10	Mansfield.
Ross	H. W. Woodrow	Chillicothe	Aug. 3, 4, 5 and 6	Chillicothe.
Sandusky	Jas. A. Smith	Fremont	Sept. 21, 22, 23, and 24	Fremont.
Scioto	A T. Noel	Portsmouth	Sept. 7, 8, 9 and 10	New Boston.
Shelby	J. E. Russell.	Sidney	Sept. 21, 22, 23 and 24	Sidney.
Stark	J. H. Lehman	Canton	Sept. 28, 29, 30 and Oct. 1	Canton.
Summit	Albert Hale	Mogadore	Oct. 5, 6, 7 and 8	Akron.
Trumbull	James L. Kennedy	Warren	Aug. 31 and Sept. 1, 2 and 3	Warren.
Tuscarawas	H. W. Streb	Canal Dover	Sept. 21, 22, 23 and 24	Canal Dover.
Union	E. W. Porter	Marysville	Sept. 28, 29, 30 and Oct. 1	Marysville.
Van Wert	O. D. Swartout	Van Wert	Sept. 7, 8, 9 and 10	Van Wert.
Warren	George W. Carey	Lebanon	Sept. 14, 15, 16 and 17	Lebanon.
Washington	J. C. Brenan	Marietta	Sept. 7, 8, 9 and 10	Marietta.
Wayne	I. N. Kinney	Wooster	Aug. 24, 25, 26 and 27	Wooster.
Wood	J. O. Avery	Weston		Bowling Green.
Wyandot	Oscar Billhardt	Upper Sandusky	Sept. 7, 8, 9 and 10	Upper Sandusky.

TABLE II—CATTLE.

Counties.	Short Horns.			Devons.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	16	$45 00	$42 00			
Allen				21	$63 00	$46 35
Ashtabula	1	41 50	2 00	11	41 50	24 50
Athens	12	50 00	35 00			
Auglaize	8	61 50	31 00		61 50	
Belmont	21	56 00	48 00		56 00	
Brown	10	60 00	47 00			
Butler	21	86 00	74 00			
Carroll	20	57 00	57 00			
Champaign		76 00				
Clark		70 00		11	70 00	55 00
Clermont	12	73 00	46 00			
Columbiana		57 00				
Coshocton	30	112 00	111 00	21	112 00	93 00
Crawford	18	70 00	62 00		70 00	
Cuyahoga		37 50		10	37 50	25 00
West Cuyahoga	8	51 25	26 50			
Darke	10	90 00	51 30			
Erie	13	60 50	28 00			
Fairfield	15	90 00	84 00			
Fulton	5	63 00	17 50			
Geauga	19	41 00	38 50	17	41 00	28 00
Greene	6	82 00	37 00			
Guernsey	31	78 00	74 00	16	78 00	48 00
Hamilton	11	96 00	56 00			
Hancock		64 00		20	64 00	55 00
Hardin	1	74 00	7 00		74 00	
Harrison	*23	36 00	30 00			
Holmes	3	48 50	10 00			
Huron	10	44 00	32 50			
Jefferson	14	69 00	55 00			
Lawrence	6	45 00	18 50			
Licking	12	86 00	62 00	31	86 00	82 00
Logan	26	72 00	39 00			
Lorain	9	67 50	61 00			
Madison	14	96 00	74 00			
Mahoning	14	83 00	64 00			
Marion	10	55 00	32 00			
Medina	19	57 00	41 50			
Meigs	3	29 00	16 00			
Mercer	8	77 00	44 00	12	77 00	63 00
Miami	2	87 00	16 00	13	87 00	57 00
Monroe	9	46 00	23 00		46 00	
Morgan	17	40 00	19 00		40 00	
Morrow	12	43 00	23 00			
Muskingum	12	87 00	47 75	18	87 00	68 75
Noble	†18	57 00	42 00			
Ottawa						
Paulding	18	67 00	50 00	7	64 50	30 00
Perry	7	46 50	22 00	11	46 50	29 00

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*Includes Herefords.
†Includes Devons and Polled Breeds.

TABLE II—CATTLE—Continued.

Counties.	Short Horn.			Devons.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	....	$44 00	....	10	$44 00	$30 50
Preble	18	82 00	$51 00	‡23	82 00	72 00
Putnam	13	69 00	43 00	20	69 00	63 00
Richland	13	64 00	43 00	....	....	....
Ross	1	56 00	4 00	....	....	....
Sandusky	32	96 00	66 00	....	....	....
Scioto	....	....	....	....	....	....
Shelby	10	59 00	....	....	44 00	....
Stark	21	90 00	78 00	....	....	....
Summit	8	77 00	40 00	....	....	....
Trumbull	32	99 00	99 00	....	....	....
Tuscarawas	21	70 00	60 50	....	....	....
Union	2	51 00	8 00	....	....	....
Van Wert	38	....	68 00	8	....	47 00
Warren	2	52 00	6 00	....	....	....
Washington	15	40 00	32 50	5	40 00	14 50
Wayne	9	52 00	31 00	....	....	....
Wood	18	74 00	63 00	14	74 00	62 00
Wyandot	2	66 00	8 00	....	....	....
Totals	809	$4,221 75	$2,398 05	299	$1,655 50	$993 60

‡ Includes Jerseys.

TABLE II—CATTLE—Continued.

Counties.	Polled breeds.			Herefords.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	7	$45 00	$42 00	....	....	....
Allen	25	125 50	62 55	5	$63 00	$22 00
Ashtabula	13	83 00	27 00	....	....	....
Athens	1	50 00	6 00	1	50 00	10 00
Auglaize	20	123 00	67 00	....	61 50	....
Belmont	....	56 00	....	....	56 00	....
Brown	10	50 00	40 00	....	....	....
Butler	....	77 00	....	13	77 00	73 00
Carroll	18	82 00	33 00	....	....	....
Champaign	8	228 00	39 00	....	....	....
Clark	41	280 00	131 00	5	70 00	20 00
Clermont	....	....	....	....	....	....
Columbiana	....	57 00	....	....	....	....
Coshocton	29	112 00	95 00	10	112 00	50 50
Crawford	....	70 00	....	....	70 00	....
Cuyahoga	2	37 50	7 00	....	37 50	....
West Cuyahoga	20	51 25	40 00	11	51 25	32 25
Darke	11	90 00	62 10	....	....	....
Erie	13	59 00	39 00	....	....	....
Fairfield	....	90 00	....	....	....	....
Fulton	....	126 00	....	3	63 00	11 00
Geauga	24	82 00	77 00	....	41 00	....
Greene	24	164 00	127 00	....	....	....
Guernsey	5	78 00	20 00	13	78 00	48 00
Hamilton	14	192 00	56 00	18	96 00	89 00
Hancock	39	128 00	105 00	....	....	....
Hardin	....	74 00	....	10	74 00	39 00
Harrison	22	36 00	29 00	....	....	....
Holmes	....	48 50	....	....	....	....
Huron	....	....	....	....	44 00	....
Jefferson	....	....	....	....	....	....
Lawrence	....	....	....	....	....	....
Licking	....	....	....	18	86 00	77 00
Logan	8	72 00	48 00	5	72 00	20 00
Lorain	25	67 50	62 50	20	67 50	64 50
Madison	25	165 00	101 00	....	....	....
Mahoning	16	83 00	72 00	11	83 00	45 00
Marion	3	120 00	14 00	....	....	....
Medina	....	....	....	....	....	....
Meigs	4	58 00	21 00	....	....	....
Mercer	44	231 00	188 00	....	77 00	....
Miami	1	174 00	6 00	8	87 00	37 00
Monroe	5	46 00	21 00	....	....	....
Morgan	....	35 00	....	4	35 00	11 00
Morrow	16	43 00	30 00	4	43 00	11 00
Muskingum	32	174 00	135 50	8	87 00	42 50
Noble	....	....	....	....	....	....
Ottawa	....	....	....	....	....	....
Paulding	20	64 50	50 50	....	67 50	....
Perry	....	....	....	....	....	....

TABLE II—CATTLE—Continued.

Counties.	Polled breeds.			Herefords.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	12	$88 00	$33 00	....	$44 00	....
Preble	13	164 00	74 00	12	....	$68 00
Putnam	22	69 00	63 50	....	69 00	....
Richland	18	100 00	82 00	....	....	....
Ross	9	112 00	34 00	....	56 00	....
Sandusky	13	96 00	63 00	12	96 00	54 00
Scioto	3	....	....	4	....	....
Shelby	6	59 00	....	....	59 00	....
Stark	23	180 00	44 00	10	90 00	52 00
Summit	15	153 00	60 00	11	77 00	52 50
Trumbull	....	....	....	....	....	....
Tuscarawas	8	70 00	40 00	....	....	....
Union	32	153 00	67 00	....	....	....
Van Wert	32	....	246 00	....	....	....
Warren	....	....	....	....	....	....
Washington	9	59 00	19 50	*e*14	60 50	32 50
Wayne	....	....	....	....	....	....
Wood	54	212 00	175 00	6	74 00	36 00
Wyandot	....	66 00	....	....	....	....
Totals	809	$5,608 75	$2,855 15	236	$2,274 75	$997 75

e Includes Jerseys and Ayrshires.

TABLE II—CATTLE—Continued.

Counties.	Jerseys.			Holsteins.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded,
Adams	12	$45 00	$36 00	....	....	....
Allen	32	63 00	71 45	11	$62 50	$31 95
Ashtabula	38	41 50	36 50	....	41 50	....
Athens	3	50 00	13 00	8	50 00	23 00
Auglaize	24	61 50	58 00	....	61 50	....
Belmont	23	56 00	49 00	6	56 00	21 00
Brown	25	60 00	55 00	5	60 00	7 00
Butler	34	77 00	72 00	15	77 00	77 00
Carroll	18	41 00	35 00	9	41 00	29 00
Champaign	15	76 00	57 00	20	81 00	71 00
Clark	15	70 00	63 00	13	70 00	52 00
Clermont	22	73 00	64 00	....	....	....
Columbiana	27	57 00	57 00	24	57 00	57 00
Coshocton	33	112 00	101 50	42	112 00	112 00
Crawford	....	70 00	....	....	....	....
Cuyahoga	23	37 50	36 50	31	37 50	33 00
West Cuyahoga	23	51 25	49 75	21	51 25	42 75
Darke	24	90 00	72 00	12	90 00	67 50
Erie	28	59 00	38 00	16	59 00	47 50
Fairfield	8	90 00	55 00	....	....	....
Fulton	2	63 00	11 00	8	63 00	31 00
Geauga	41	41 00	41 00	47	41 00	38 50
Greene	33	164 00	146 00	....	....	....
Guernsey	11	78 00	50 00	2	78 00	10 00
Hamilton	62	96 00	96 00	17	96 00	96 00
Hancock	26	64 00	51 00	19	64 00	52 00
Hardin	24	148 00	82 00	7	74 00	34 00
Harrison	*15	30 00	23 00	....	....	....
Holmes	14	48 50	40 00	....	48 50	....
Huron	†26	44 00	41 50	....	....	....
Jefferson	13	57 00	42 00	10	58 00	46 00
Lawrence	29	45 00	36 00	3	45 00	7 00
Licking	25	86 00	72 00	....	35 00	....
Logan	10	72 00	45 00	....	72 00	....
Lorain	34	67 50	64 50	19	67 50	67 50
Madison	27	96 00	84 50	....	....	....
Mahoning	20	83 00	68 00	23	83 00	75 00
Marion	10	60 00	30 00	2	60 00	6 00
Medina	18	36 00	27 50	38	36 00	30 50
Meigs	7	29 00	24 00	....	29 00	....
Mercer	‡17	77 00	66 00	....	77 00	....
Miami	3	87 00	42 00	17	87 00	77 00
Monroe	18	46 00	44 00	4	46 00	18 00
Morgan	4	35 00	9 00	....	40 00	....
Morrow	17	43 00	31 00	9	43 00	24 00
Muskingum	28	87 00	79 50	....	87 00	....
Noble	....	....	....	....	....	....
Ottawa	2	28 00	3 50	....	....	....
Paulding	1	28 00	10 00	7	66 00	26 50
Perry	1	46 50	....	....	46 50	....

TABLE II—CATTLE—Continued.

Counties.	Jerseys.			Holsteins.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	9	$44 00	$20 50	11	$44 00	$32 00
Preble	....	....	....	7	82 00	68 00
Putnam	5	69 00	40 00	7	69 00	28 00
Richland	27	100 00	86 00	....	....	....
Ross	16	56 00	52 00	13	56 00	48 00
Sandusky	29	96 00	75 00	16	96 00	78 00
Scioto	3	138 00	12 00	....	....	....
Shelby	....	59 00	....	11	59 00	....
Stark	51	90 00	90 00	10	89 00	50 00
Summit	38	77 00	72 50	....	....	....
Trumbull	57	99 00	99 00	38	99 00	91 00
Tuscarawas	20	70 00	55 50	23	70 00	59 00
Union	15	51 00	42 00	15	51 00	43 00
Van Wert	25	....	72 00	20	....	72 00
Warren	3	52 00	13 00	....	....	....
Washington	....	....	....	8	40 00	22 00
Wayne	....	....	....	12	52 00	39 50
Wood	22	74 00	54 00	16	74 00	74 00
Wyandot	9	66 00	33 00	7	66 00	31 00
Total	1,294	$4,307 25	$3,195 20	689	$3,496 75	$2,046 20

* Includes Devons, Holsteins and Ayrshires.
† Includes Holsteins and Ayrshires.
‡ Includes Ayrshires.

TABLE II—CATTLE—Continued.

Counties.	Ayrshires.			Any other breeds.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams				20	$42 00	$21 00
Allen				10	77 50	37 35
Ashtabula				32	127 00	38 00
Athens				4	16 00	16 00
Auglaize				28	114 00	73 00
Belmont				3	12 00	12 00
Brown						
Butler						
Carroll	1		$1 00			
Champaign						
Clark		$70 00		18	120 00	70 00
Clermont						
Columbiana						
Coshocton				23	112 00	96 50
Crawford						
Cuyahoga	8	37 50	21 50	36	56 00	56 50
West Cuyahoga	13	51 25	42 00	22	62 25	42 75
Darke				12	110 00	49 50
Erie	10	59 00	32 00			
Fairfield						
Fulton		63 00		15	30 00	24 00
Geauga	14	41 00	23 00	59	96 00	84 00
Greene				6	90 00	30 00
Guernsey				10	42 00	42 00
Hamilton						
Hancock				35	65 00	65 00
Hardin				3	27 00	27 00
Harrison				84	135 00	100 00
Holmes						
Huron						
Jefferson				11	33 00	23 00
Lawrence				7	15 00	12 50
Licking				20	58 00	58 00
Logan				15	119 50	44 50
Lorain	22	67 50	67 50	20	67 50	61 00
Madison						
Mahoning				9	50 00	50 00
Marion	11	71 00	40 00	27	100 00	77 00
Medina	13	36 00	27 50	32	53 50	42 50
Meigs						
Mercer						
Miami				10	87 00	41 00
Monroe				12	46 00	26 00
Morgan				18	24 00	24 00
Morrow				22	42 00	42 00
Muskingum						
Noble				8	36 00	10 00
Ottawa						
Paulding				18	50 50	50 50
Perry				5	46 50	14 00

Table II—Cattle—Continued.

Counties.	Ayrshires.			Any other breeds.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	6	$44 00	$17 50	23	$51 75	$37 75
Preble						
Putnam				43	185 00	101 50
Richland						
Ross				10	94 00	69 00
Sandusky				43	118 00	106 00
Scioto						
Shelby				4	27 00	
Stark						
Summit				13	34 50	34 50
Trumbull						
Tuscarawas				3	60 00	14 00
Union						
Van Wert						
Warren				4	58 00	14 00
Washington				18	42 50	35 00
Wayne						
Wood		74 00				
Wyandot				1	10 00	10 00
Totals	98	$614 25	$270 00	816	$2,833 00	$1,882 35

TABLE II—CATTLE AND HORSES—Continued.

Counties.	Fat cattle and work oxen.			Thoroughbreds. (Running horses.)		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	1	$10 00	$5 00			
Allen						
Ashtabula		27 00				
Athens	2	26 00	5 00	2	$28 00	$12 00
Auglaizè				12	58 00	17 00
Belmont		23 00		3	47 00	12 00
Brown	5	13 00	9 00			
Butler						
Carroll	2	14 00	9 00			
Champaign						
Clark					68 00	
Clermont						
Columbiana						
Coshocton	3	20 00	6 00	3	76 00	26 00
Crawford						
Cuyahoga	5	47 50	13 00			
West Cuyahoga	3	13 50	3 00			
Darke						
Erie						
Fairfield						
Fulton		15 00				
Geauga	10	62 50	13 00			
Greene						
Guernsey	6	55 00	14 00			
Hamilton				8	300 00	100 00
Hancock						
Hardin	2	74 00	5 00		290 00	232 50
Harrison						
Holmes	1	7 50	5 00			
Huron						
Jefferson						
Lawrence	6	34 00	26 00			
Licking	3	41 00	11 00	9	89 00	43 00
Logan	2	16 50	7 50			
Lorain	16	67 50	57 50			
Madison				10	71 00	39 00
Mahoning						
Marion	9	30 00	6 00	10	82 00	31 00
Medina						
Meigs	11	34 00	23 00			
Mercer	12	36 00	23 00	2	82 00	10 00
Miami						
Monroe	2	16 00	9 00			
Morgan	3	20 00	10 00	3	67 00	5 00
Morrow	5	20 00	10 00			
Muskingum		5 00				
Noble	2	27 00	3 00			
Ottawa						
Paulding				3	27 00	22 00
Perry	10	46 50	28 00			

TABLE II—CATTLE AND HORSES—Continued.

Counties	Fat cattle and work oxen.			Thoroughbreds. (Running horses.)		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	13	$54 00	$35 00	3	$75 00	$48 75
Preble	10	58 00	54 00			
Putnam						
Richland						
Ross						
Sandusky	8	23 00	15 00			
Scioto						
Shelby	2	8 00				
Stark						
Summit						
Trumbull	13	36 00	36 00			
Tuscarawas						
Union						
Van Wert			54 00	16		250 00
Warren				24	215 00	190 00
Washington	2	23 50		2	43 50	6 00
Wayne						
Wood	28	145 00	110 00			
Wyandot						
Totals	197	$1,149 00	$605 00	110	$1,618 50	$1,044 25

TABLE II—HORSES—Continued.

Counties.	Roadsters.			General purpose.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	34	$245 00	$142 00	77	$152 90	$140 00
Allen	34	117 00	75 00	6	25 50	14 00
Ashtabula	28	94 00	52 00	26	94 00	47 00
Athens	19	56 00	31 00	31	60 00	46 00
Auglaize	13	58 00	29 00	33	83 00	50 00
Belmont	40	123 00	48 00	32	114 00	56 00
Brown	40	130 00	120 00	50	122 00	117 00
Butler	104	187 00	178 00	90	187 00	178 00
Carroll	64	132 00	117 00	29	91 00	61 00
Champaign	119	139 00	127 00	67	79 00	69 00
Clark	50	194 00	151 00	18	42 00	35 00
Clermont	61	117 00	101 00	90	150 00	138 00
Columbiana	38	93 00	86 00	22	93 00	74 00
Coshocton	50	161 00	133 50	41	161 00	97 00
Crawford	23	90 00	75 00	....	....	....
Cuyahoga	22	55 00	40 00	29	66 00	46 50
West Cuyahoga	38	67 00	49 50	19	37 00	31 50
Darke	68	125 00	112 50	37	125 00	99 00
Erie	26	98 50	20 50	32	98 50	47 50
Fairfield	83	130 00	130 00	61	113 00	136 00
Fulton	49	154 50	104 50	21	70 50	39 50
Geauga	76	144 75	93 50	72	92 50	71 50
Greene	35	85 00	83 00	26	77 00	60 00
Guernsey	32	94 00	77 00	20	94 00	60 00
Hamilton	95	162 00	157 00	103	189 00	189 00
Hancock	28	104 00	76 00	14	104 00	41 00
Hardin	36	95 00	64 00	50	175 00	99 00
Harrison	27	9 00	9 00	....	....	....
Holmes	37	120 00	92 50	15	100 00	54 50
Huron	30	108 00	66 00	17	63 50	21 00
Jefferson	28	117 00	76 00	18	89 00	67 00
Lawrence	18	47 00	42 00	27	47 00	41 00
Licking	72	175 00	206 00	28	131 00	102 50
Logan	82	273 00	191 50	87	159 00	128 50
Lorain	30	60 00	58 00	46	60 00	53 00
Madison	46	83 00	77 50	15	71 00	46 50
Mahoning	45	111 00	75 00	50	113 00	82 00
Marion	20	97 00	85 00	30	102 00	58 00
Medina	57	61 50	48 00	42	46 50	30 00
Meigs	40	149 00	122 00	8	45 00	42 00
Mercer	46	82 00	80 00	44	82 00	52 00
Miami	120	229 00	198 00	87	96 00	163 00
Monroe	25	65 00	54 00	36	96 00	84 00
Morgan	20	58 00	36 00	22	60 00	17 00
Morrow	92	150 00	106 00	30	86 00	57 00
Muskingum	37	140 00	115 75	29	140 00	80 75
Noble	7	18 00	14 00	19	105 00	63 00
Ottawa	....	....	....	7	76 00	21 00
Paulding	22	77 00	35 00	12	80 00	32 00
Perry	4	78 00	23 00	8	78 00	35 00

TABLE II—HORSES—Continued.

Counties.	Roadsters.			General purpose.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	29	$141 00	$64 00	23	$74 50	$40 00
Preble	63	134 00	134 00	57	134 00	134 00
Putnam	94	256 00	200 00	....	....	....
Richland	25	158 00	67 00	9	46 00	17 00
Ross	33	116 00	78 00	16	58 00	56 00
Sandusky	31	143 00	76 00	16	142 00	46 00
Scioto	5	....	....	3	....	....
Shelby	32	121 00	....	32	139 00	....
Stark	52	200 00	133 00	35	122 00	77 00
Summit	66	152 50	133 50	42	59 50	54 00
Trumbull	64	122 00	88 00	49	125 00	71 00
Tuscarawas	23	225 00	83 00	17	75 00	42 00
Union	51	74 00	73 00	24	73 00	48 00
Van Wert	52	153 00	117 00	31	153 00	77 00
Warren	31	92 00	87 00	41	108 00	91 00
Washington	10	67 50	18 50	16	61 00	20 50
Wayne	36	137 00	90 50	5	45 00	13 00
Wood	42	121 00	94 00	30	100 00	70 00
Wyandot	42	93 00	86 00	17	93 00	51 00
Totals	2,991	$8,064 25	$5,895 75	2,236	$6,229 00	$4,338 75

TABLE II—HORSES—Continued.

Counties.	Draft (English).			Draft (French).		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	*35	$161 00	$116 00	....	....	....
Allen	1	92 00	9 00	8	$92 00	$35 25
Ashtabula	*19	94 00	45 00	....	....	....
Athens	17	58 00	39 00	....	....	....
Auglaize	4	96 00	12 00	12	96 00	51 00
Belmont	*19	116 00	45 00	....	....	....
Brown	45	122 00	110 00	....	....	....
Butler	....	....	....	....	....	....
Carroll	28	91 00	68 00	....	....	....
Champaign	19	70 00	51 00	65	128 00	72 00
Clark	22	144 00	107 00	6	144 00	44 00
Clermont	50	153 00	133 00	....	....	....
Columbiana	*28	93 00	81 00	....	....	....
Coshocton	31	162 00	96 50	....	....	....
Crawford	2	180 00	16 00	....	....	....
Cuyahoga	4	56 50	10 00	....	....	....
West Cuyahoga	20	67 00	47 50	....	....	....
Darke	*15	185 00	129 60	....	....	....
Erie	....	....	....	....	....	....
Fairfield	*71	186 00	153 00	....	....	....
Fulton	19	82 50	50 50	10	82 50	38 00
Geauga	....	....	....	65	70 50	43 95
Greene	*10	82 00	29 00	....	....	....
Guernsey	17	94 00	56 00	....	....	....
Hamilton	8	90 00	43 00	....	....	....
Hancock	3	95 00	18 00	7	95 00	32 00
Hardin	1	80 00	7 00	15	80 00	54 00
Harrison	*26	45 00	28 00	....	....	....
Holmes	14	120 00	44 50	....	....	....
Huron	....	....	....	....	....	....
Jefferson	23	141 00	90 00	....	....	....
Lawrence	14	47 00	36 00	....	....	....
Licking	22	124 00	114 00	....	....	....
Logan	*11	117 50	52 00	....	....	....
Lorain	23	60 00	50 00	15	60 00	26 50
Madison	15	83 00	63 50	4	83 00	12 00
Mahoning	1	38 00	10 00	7	38 00	27 00
Marion	2	82 00	15 00	4	82 00	16 00
Medina	23	50 00	37 00	....	....	....
Meigs	....	....	....	31	135 00	97 00
Mercer	*50	157 00	81 00	....	....	....
Miami	*82	383 00	254 00	....	....	....
Monroe	....	....	....	....	....	....
Morgan	*13	62 00	28 00	....	....	....
Morrow	1	64 00	6 00	16	64 00	51 00
Muskingum	*19	140 00	92 00	....	....	....
Noble	9	78 00	27 00	....	....	....
Ottawa	....	....	....	5	76 00	16 00
Paulding	....	....	....	8	95 00	42 00
Perry	*7	78 00	37 00	....	....	....

TABLE II—HORSES—Continued.

Counties.	Draft, (English).			Draft, (French).		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	*21	$74 50	$50 00	....	....	....
Preble	*27	116 00	91 00	....	....	....
Putnam	5	103 00	28 00	27	$103 00	$ 62 00
Richland	4	79 00	13 00	....	....	....
Ross	....	....	....	27	127 00	100 00
Sandusky	6	106 00	16 00	29	139 00	66 00
Scioto	* 5	141 00	36 50	....	....	....
Shelby	*28	190 00	....	....	....	....
Stark	3	88 00	13 00	4	88 00	22 00
Summit	21	143 00	81 50	....	....	....
Trumbull	15	105 00	46 00	....	....	....
Tuscarawas	21	150 00	48 00	....	....	....
Union	5	88 00	22 00	6	88 00	45 00
Van Wert	19	135 00	137 00	7	120 00	42 00
Warren	4	54 00	11 00	....	....	....
Washington	*12	61 00	26 50	....	....	....
Wayne	28	135 00	63 00	....	....	....
Wood	16	80 00	38 00	10	80 00	37 00
Wyandot	*28	93 00	61 00	....	....	....
Totals	1,111	$6,461 00	$3,318 60	388	$2,186 00	$1,031 70

*Includes all draft classes.

TABLE II—HORSES—Continued.

Counties.	Speed horses.			Horses, all other classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	....	....	....	49	$128 00	$122 00
Allen	48	$1,400 00	$745 00	32	122 00	55 00
Ashtabula	44	1,050 00	1,035 00	18	54 00	34 00
Athens	17	60 00	42 00	34	120 00	76 00
Auglaize	15	1,800 00	1,071 00	34	133 00	106 00
Belmont	15	510 00	220 20	3	....	....
Brown	12	60 00	60 00	110	....	225 00
Butler	127	2,555 00	2,455 00	129	369 00	350 00
Carroll	65	1,000 00	892 10	3	....	2 00
Champaign	73	2,300 00	2,245 00	24	34 00	27 00
Clark	83	2,500 00	2,005 00	43	236 00	114 00
Clermont	23	490 00	490 00	83	114 00	114 00
Columbiana	55	800 00	800 00	24	78 00	78 00
Coshocton	46	1,950 00	1,900 00	20	110 50	70 50
Crawford	37	1,070 00	800 00	....	....	....
Cuyahoga	47	900 00	712 70	8	35 00	21 00
West Cuyahoga	41	1,100 00	796 00	....	....	....
Darke	89	2,109 00	1,611 00	35	110 00	104 00
Erie	40	1,300 00	1,000 00	18	242 50	16 00
Fairfield	74	2,350 00	2,310 00	33	125 00	112 00
Fulton	23	540 00	439 50	26	151 50	56 50
Geauga	38	750 00	750 00	26	23 00	23 00
Greene	56	1,785 00	1,120 50	10	60 00	45 00
Guernsey	45	349 00	265 20	....	68 00	68 00
Hamilton	110	2,375 00	2,075 00	79	277 00	277 00
Hancock	46	1,850 00	1,047 75	72	583 00	159 00
Hardin	....	1,050 00	931 50	18	106 00	30 00
Harrison	35	850 00	600 00	113	231 00	180 00
Holmes	19	1,000 00	385 50	6	40 00	40 00
Huron	....	....	....	12	35 00	9 00
Jefferson	40	620 00	600 00	11	85 00	62 00
Lawrence	14	165 00	165 00	....	....	....
Licking	53	1,800 00	1,800 00	19	34 00	34 00
Logan	39	1,370 00	1,370 00	22	129 00	86 50
Lorain	....	....	....	12	82 00	72 00
Madison	81	2,115 00	1,856 25	42	203 00	132 50
Mahoning	18	72 00	57 00	30	113 00	82 00
Marion	93	1,010 60	904 00	70	225 00	103 00
Medina	28	1,050 00	757 08	107	117 00	84 50
Meigs	34	885 00	640 00	....	....	....
Mercer	....	1,800 00	955 00	2	82 00	15 00
Miami	60	1,900 00	1,810 00	58	225 00	103 00
Monroe	55	790 00	790 00	....	....	....
Morgan	16	475 00	286 00	8	20 00	17 00
Morrow	....	1,550 00	1,550 00	70	170 00	101 00
Muskingum	52	2,000 00	1,975 00	20	83 00	67 25
Noble	20	220 00	220 00	5	45 00	29 00
Ottawa	....	....	....	....	....	....
Paulding	51	1,250 00	1,200 00	33	77 00	71 00
Perry	78	2,650 00	2,587 50	....	....	....

TABLE II—HORSES—Concluded..

Counties.	Speed horses.			Horses, all other classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	49	$1,150 00	$850 00	....	....	....
Preble	....	1,100 00	1,000 00	72	$175 00	$146 00
Putnam	55	1,600 00	1,600 00	204	581 00	345 00
Richland	55	1,800 00	1,750 00	25	217 00	146 00
Ross	116	2,700 00	2,685 00	29	118 00	105 00
Sandusky	65	1,200 00	950 00	15	74 00	42 00
Scioto	....	....	....	5	....	....
Shelby	39	1,225 00	1,015 75	15	46 00	....
Stark	29	1,050 00	1,010 00	88	547 00	237 00
Summit	114	2,150 00	1,700 00	57	187 50	151 50
Trumbull	58	1,625 00	1,587 50	....	....	....
Tuscarawas	35	1,200 00	1,200 00	16	80 00	47 50
Union	61	1,640 00	1,042 00	29	106 00	59 00
Van Wert	28	....	865 00	106	356 00	356 00
Warren	70	750 00	712 50	14	90 00	77 00
Washington	3	62 00	7 00	3	16 00	16 00
Wayne	102	1,500 00	1,500 00	2	15 00	4 00
Wood	108	3,650 00	3,200 00	....	240 00	221 00
Wyandot	7	73 00	29 00	4	16 00	16 00
Totals	3,047	$82,131 60	$70,941 53	2,255	$8,140 00	$5,533 75

TABLE II—MULES AND SHEEP.

Counties.	Mules and asses.			Sheep. Fine wools.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	17	$32 00	$22 00	18	$54 00	$54 00
Allen	......	......	......	36	67 50	54 45
Ashtabula	......	......	......	22	26 00	26 00
Athens	6	24 00	10 00	33	86 00	29 00
Auglaize	......	18 00	......	24	43 00	43 00
Belmont	3	30 00	8 00	21	81 00	64 00
Brown	12	32 00	26 00	12	34 00	29 00
Butler	......	......	......	19	51 00	51 00
Carroll	2	......	1 00	41	76 00	76 00
Champaign	......	......	......	118	156 00	156 00
Clark	......	59 00	......	56	120 00	97 00
Clermont	35	66 00	59 00	......	......	......
Columbiana	......	......	......	39	57 00	57 00
Coshocton	......	......	......	65	124 00	113 00
Crawford	......	......	......	6	30 00	10 00
Cuyahoga	......	......	......	11	26 50	25 00
West Cuyahoga	......	......	......	40	56 00	56 00
Darke	......	......	......	44	100 00	90 00
Erie	......	......	......	14	56 00	38 00
Fairfield	......	......	......	61	134 00	129 00
Fulton	......	......	......	49	63 00	51 00
Geauga	......	......	......	32	47 50	46 50
Greene	......	......	......	14	39 00	39 00
Guernsey	1	17 00	3 00	32	114 50	78 50
Hamilton	......	......	......	10	37 00	24 00
Hancock	......	......	......	80	82 00	80 00
Hardin	......	25 00	......	6	31 00	19 00
Harrison	......	......	......	27	47 00	45 00
Holmes	......	......	......	11	48 00	34 00
Huron	......	......	......	11	25 00	24 00
Jefferson	......	......	......	47	108 00	100 00
Lawrence	4	33 00	14 00	3	27 00	6 00
Licking	......	......	......	53	98 00	96 50
Logan	......	......	......	50	49 00	38 50
Lorain	......	......	......	37	55 50	45 50
Madison	4	16 50	8 50	14	42 50	42 50
Mahoning	......	......	......	*b*94	201 00	182 00
Marion	......	......	......	40	120 00	61 00
Medina	......	......	......	45	62 00	56 50
Meigs	1	8 00	5 00	34	42 00	42 00
Mercer	......	......	......	46	132 00	120 00
Miami	18	84 00	48 00	......	36 00	......
Monroe	2	33 00	9 00	21	111 00	72 00
Morgan	......	22 00	......	51	50 00	46 00
Morrow	......	......	......	84	132 00	100 00
Muskingum	1	8 00	6 00	41	111 00	105 00
Noble	......	......	......	11	37 50	28 00
Ottawa	......	......	......	......	......	......
Paulding	......	......	......	......	......	......
Perry	......	......	......	12	31 50	24 00

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b Includes coarse and long wools.

TABLE II.—MULES AND SHEEP—Continued.

Counties.	Mules and asses.			Sheep. Fine wools.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	....	....	....	23	$67 50	$57 00
Preble	12	$54 00	$48 00	27	33 00	33 00
Putnam	....	....	....	29	30 00	30 00
Richland	....	....	....	18	91 00	69 00
Ross	....	....	....	....	....	....
Sandusky	....	....	....	22	49 00	47 00
Scioto	....	....	....	1	....	....
Shelby	....	....	....	5	33 00	....
Stark	5	15 00	15 00	37	94 00	81 00
Summit	....	....	....	63	89 00	67 50
Trumbull	....	....	....	29	39 00	39 00
Tuscarawas	....	....	....	58	88 00	70 00
Union	....	....	....	68	138 00	82 50
Van Wert	7	30 00	30 00	27	72 00	72 00
Warren	....	....	....	12	33 00	21 00
Washington	1	28 25	3 00	24	42 75	34 25
Wayne	....	....	....	....	....	....
Wood	4	24 00	12 00	42	80 00	70 00
Wyandot	....	....	....	9	50 00	36 00
Totals	135	$658 75	$327 50	2,129	$4,407 25	$3,613 20

TABLE II—SHEEP AND HOGS—Continued.

Counties.	Sheep. Coarse and long wools.			Hogs. Poland Chinas.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	15	$54 00	$45 00	13	$27 00	$27 00
Allen	109	135 50	180 00	18	55 50	39 55
Ashtabula	125	238 00	183 00	21	42 00	42 00
Athens	46	83 00	74 00	....	....	....
Auglaize	33	72 00	96 00	50	60 00	54 00
Belmont	19	77 00	40 00	4	38 00	10 00
Brown	45	150 00	145 00	50	45 00	45 00
Butler	112	255 00	255 00	43	72 00	72 00
Carroll	43	76 00	76 00	12	42 00	33 00
Champaign	185	208 00	202 00	12	52 00	37 00
Clark	110	246 00	175 00	21	56 00	43 00
Clermont	39	108 00	94 00	19	40 00	40 00
Columbiana	31	88 00	88 00	11	31 00	31 00
Coshocton	59	268 00	159 00	24	50 00	50 00
Crawford	18	120 00	35 00	19	40 00	24 00
Cuyahoga	64	77 75	74 25	14	31 00	23 00
West Cuyahoga	59	84 00	84 00	34	50 00	43 50
Darke	35	100 00	90 00	25	80 00	66 60
Erie	31	114 00	68 00	14	28 50	26 00
Fairfield	54	169 00	169 00	66	89 00	79 00
Fulton	49	58 50	57 50	19	30 00	24 50
Geauga	117	123 50	113 00	15	30 00	30 00
Greene	59	142 00	140 00	13	32 00	26 00
Guernsey	13	58 50	49 50	....	....	....
Hamilton	83	153 00	153 00	42	82 00	79 00
Hancock	67	116 00	107 00	44	39 00	39 00
Hardin	35	93 00	71 00	1	48 00	2 00
Harrison	35	41 00	40 00	†7	11 00	10 00
Holmes	4	48 00	13 00	8	33 00	21 50
Huron	16	72 00	41 00	9	24 00	22 00
Jefferson	25	73 00	64 00	16	28 00	28 00
Lawrence	2	9 00	4 00	....	....	....
Licking	101	187 50	184 50	50	83 00	76 00
Logan	42	98 00	76 00	35	58 50	48 00
Lorain	42	92 50	64 25	34	37 50	37 50
Madison	57	154 00	136 50	23	71 00	49 00
Mahoning	....	....	....	7	28 00	22 00
Marion	44	120 00	97 00	13	48 00	27 00
Medina	60	120 00	119 00	....	....	....
Meigs	7	39 00	22 00	....	12 00	....
Mercer	63	132 00	124 00	19	52 00	48 00
Miami	78	180 00	156 00	56	73 00	73 00
Monroe	16	74 00	58 00	14	32 00	32 00
Morgan	37	43 00	31 00	14	30 00	21 00
Morrow	85	132 00	120 00	19	43 00	36 00
Muskingum	24	111 00	85 25	24	61 00	61 00
Noble	13	39 00	30 00	7	22 50	11 50
Ottawa	1	26 00	3 00	....	....	....
Paulding	21	27 50	27 50	....	....	....
Perry	4	31 50	8 50	....	....	....

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† Includes Berkshires and Chester Whites.

TABLE II—SHEEP AND HOGS—Concluded.

Counties.	Sheep. Coarse and long wools.			Hogs. Poland Chinas.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	59	$163 50	$139 00	11	$27 00	$24 50
Preble	64	133 00	123 00	32	60 00	56 00
Putnam	61	144 00	96 00	31	39 00	37 00
Richland	35	142 00	94 00	18	87 00	84 00
Ross	10	127 00	34 00	....	....	....
Sandusky	67	98 00	98 00	36	60 00	60 00
Scioto	....	17 00	1 50	....	....	....
Shelby	25	66 00	....	16	41 00	....
Stark	44	188 00	153 00	30	53 00	37 00
Summit	90	185 00	180 50	41	64 50	64 50
Trumbull	66	78 00	78 00	....	....	....
Tuscarawas	33	88 00	88 00	7	32 00	29 00
Union	15	23 00	23 00	17	43 00	38 00
Van Wert	,92	326 00	302 00	20	106 00	85 00
Warren	39	72 00	69 00	17	60 00	47 00
Washington	21	66 75	31 50	11	26 00	18 00
Wayne	27	85 00	58 00	16	40 00	26 00
Wood	26	62 00	54 00	24	56 00	52 00
Wyandot	21	50 00	50 00	‡23	43 00	43 00
Totals	3,227	$7.452 00	$6,200 25	1,309	$2,775 00	$2,310 65

‡ Includes Chester Whites.

TABLE II—HOGS—Continued.

Counties.	Berkshires.			Chester whites.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	....	....	....	2	$17 00	$7 00
Allen	16	$55 50	$39 55	21	55 50	41 85
Ashtabula	10	42 00	39 00	11	42 00	35 00
Athens	13	21 00	16 00	4	21 00	6 00
Auglaize	19	60 00	52 00	21	60 00	49 00
Belmont	8	38 00	21 00	5	38 00	6 00
Brown	30	45 00	40 00	15	45 00	38 00
Butler	20	72 00	72 00	27	72 00	72 00
Carroll	1	42 00	6 00	18	42 00	42 00
Champaign	7	52 00	21 00	6	52 00	20 00
Clark	22	56 00	41 00	18	56 00	38 00
Clermont	11	40 00	30 00	8	40 00	20 00
Columbiana	15	31 00	31 00	9	31 00	27 00
Coshocton	28	60 00	57 00	34	60 00	60 00
Crawford	....	....	....	....	40 00	....
Cuyahoga	12	31 00	26 00	9	31 00	20 50
West Cuyahoga	17	50 00	44 00	33	50 00	36 50
Darke	23	80 00	72 00	23	80 00	72 00
Erie	....	....	....	13	28 50	18 00
Fairfield	51	89 00	69 00	21	51 00	51 00
Fulton	6	30 00	19 00	9	30 00	24 00
Geauga	27	30 00	30 00	19	30 00	28 00
Greene	12	32 00	29 00	9	32 00	27 00
Guernsey	3	22 00	9 00	7	22 00	19 00
Hamilton	22	82 00	78 00	32	82 00	74 00
Hancock	30	39 00	37 00	12	39 00	26 00
Hardin	9	48 00	25 00	....	48 00	....
Harrison	....	....	....	....	....	....
Holmes	5	33 00	16 00	18	43 00	43 00
Huron	7	23 00	17 00	....	23 00	....
Jefferson	6	28 00	28 00	....	30 00	....
Lawrence	1	16 00	3 00	3	16 00	6 00
Licking	58	82 00	74 00	39	82 00	82 00
Logan	22	58 50	55 00	22	58 50	42 00
Lorain	32	37 50	33 20	22	37 50	27 50
Madison	15	71 00	61 00	30	71 00	68 50
Mahoning	26	28 00	28 00	19	28 00	28 00
Marion	14	48 00	21 00	14	48 00	36 00
Medina	10	33 00	20 50	18	38 00	44 00
Meigs	5	17 00	15 00	2	12 00	6 00
Mercer	30	52 00	49 00	....	52 00	....
Miami	32	73 00	70 00	20	73 00	50 00
Monroe	....	32 00	....	6	32 00	16 00
Morgan	16	30 00	24 00	9	25 00	15 00
Morrow	16	43 00	39 00	14	43 00	28 00
Muskingum	27	61 00	61 00	22	61 00	61 00
Noble	....	....	....	....	....	....
Ottawa	....	....	....	....	....	....
Paulding	10	55 50	27 50	25	59 50	56 50
Perry	13	23 25	21 25	....	23 25	....

TABLE II—HOGS—Continued.

Counties.	Berkshires.			Chester whites.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	6	$27 00	$16 00	3	$27 00	$12 00
Preble	11	60 00	35 00	29	60 00	56 00
Putnam	....	39 00	....	16	39 00	29 50
Richland	21	54 00	46 00	12	54 00	48 00
Ross	10	46 00	28 00	15	46 00	34 00
Sandusky	27	120 00	82 00	9	60 00	20 00
Scioto	....	25 00	7 50	....	....	....
Shelby	13	41 00	....	....	....	....
Stark	45	53 00	49 00	25	53 00	43 00
Summit	56	64 50	64 50	35	64 50	64 50
Trumbull	10	31 00	29 00	....	....	....
Tuscarawas	4	32 00	13 00	12	32 00	28 00
Union	22	43 00	38 00	20	43 00	39 00
Van Wert	17	94 00	61 00	17	94 00	74 00
Warren	19	48 00	44 00	....	....	....
Washington	7	28 00	14 00	9	26 00	20 00
Wayne	12	40 00	28 50	17	40 00	26 00
Wood	10	56 00	16 00	14	56 00	48 00
Wyandot	7	43 00	18 00	....	....	....
Totals	1,054	$2,933 75	$2,156 50	902	$2,745 25	$2.009 35

TABLE II—HOGS AND POULTRY—Continued.

Counties.	Hogs. All other breeds.			Poultry.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	4	$ 17 00	$ 17 00	139	$118 00	$ 54 00
Allen	43	155 50	110 60	370	138 00	130 00
Ashtabula	17	84 00	56 00	112	103 45	23 80
Athens	6	29 00	8 00	94	60 00	54 50
Auglaize	43	138 00	113 00	234	118 00	118 00
Belmont	5	76 00	17 00	236	215 00	66 80
Brown	20	90 00	45 00	300	145 00	90 00
Butler	26	73 00	73 00	262	102 00	81 50
Carroll				135	61 50	50 00
Champaign	37	104 00	75 00	257	207 00	134 50
Clark	43	147 00	98 00	234	203 00	124 50
Clermont	14	40 00	33 00	61	20 25	20 25
Columbiana	4	10 00	10 00			
Coshocton	8	50 00	23 00	463	233 10	170 80
Crawford				250	84 00	52 00
Cuyahoga	8	19 00	6 00			
West Cuyahoga	33	100 00	77 00	395	92 85	92 85
Darke	25	80 00	66 60	337	141 00	111 92
Erie	6	57 00	49 00	321	63 50	63 50
Fairfield				173	114 00	76 00
Fulton	17	91 50	46 50	261	208 15	150 85
Geauga	27	50 00	38 00	202	75 50	75 50
Greene	36	92 00	84 00	69	75 00	53 40
Guernsey	4	12 00	12 00	55	46 75	33 75
Hamilton	75	164 00	153 00	190	95 00	80 00
Hancock	57	114 00	98 00	145	197 00	132 50
Hardin	20	48 00	45 00	56	100 00	28 30
Harrison	14	22 00	22 00	60	38 00	24 00
Holmes	17	43 00	36 00	2		80
Huron				86	92 50	44 00
Jefferson				46	67 50	30 00
Lawrence				19	32 00	11 40
Licking	45	82 00	74 50	271	140 00	130 00
Logan	24	58 50	56 50	93	70 50	52 50
Lorain	35	75 00	50 00	424	102 00	98 50
Madison	11	71 00	38 50	96	151 50	71 00
Mahoning	4	10 00	7 50	206	119 25	102 75
Marion	26	60 00	20 00	147	150 00	60 00
Medina	17	33 00	34 00	251		69 40
Meigs				37	42 00	28 00
Mercer	75	166 00	132 00	600	159 00	146 00
Miami	49	136 00	122 00	310	198 00	144 00
Monroe	3	32 00	12 00	36	40 00	17 00
Morgan				33	84 00	21 00
Morrow				125	198 00	105 00
Muskingum	15	61 00	39 00	287	192 45	132 41
Noble				38	33 00	28 50
Ottawa				1	30 00	1 00
Paulding	58	159 00	149 50	93	91 75	80 75
Perry				78	74 50	39 75

TABLE II—HOGS AND POULTRY—Concluded.

Counties.	Hogs. All other breeds.			Poultry.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	11	$ 54 00	$ 31 50	222	$216 00	$106 25
Preble	28	60 00	60 00	225	96 00	72 00
Putnam	43	88 00	69 00	176	128 00	68 15
Richland	....	....	....	236	174 75	125 25
Ross	19	62 00	41 00	197	125 50	117 50
Sandusky	14	17 00	17 00	536	163 00	144 00
Scioto	4	....	....	236	115 00	60 39
Shelby	3	41 00	....	263	173 00	....
Stark	5	53 00	....	1,240	477 90	433 20
Summit	25	64 50	53 50	693	233 75	220 75
Trumbull	40	59 00	50 00	126	57 75	46 50
Tuscarawas	15	47 00	40 00	256	130 00	91 40
Union	25	43 00	43 00	393	156 00	155 85
Van Wert	42	282 00	185 00	630	320 00	320 00
Warren	3	40 00	20 00	172	153 00	117 75
Washington	19	43 00	34 00	37	54 25	19 00
Wayne	....	....	....	125	120 00	50 15
Wood	19	88 00	60 00	72	112 00	42 00
Wyandot	....	....	....	79	135 80	72 60
Totals	1,286	$3,891 00	$2,751 20	14,704	$8,264 70	$5,769 72

TABLE II—MECHANIC ARTS AND FARM PRODUCTS.

Counties.	Mechanic arts.			Farm products.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	51	$44 50	$32 50	332	$90 00	$80 00
Allen	14	117 00	75 60	47	91 25	18 00
Ashtabula	1	31 25	2 00	342	142 00	81 75
Athens	22	92 00	20 00	30	75 00	12 75
Auglaize	275			372	95 00	96 50
Belmont	89	153 00	56 00	66	30 00	13 25
Brown			30 85	600	130 00	90 00
Butler				850	135 50	132 50
Carroll	27	53 50	46 00	346	81 00	76 00
Champaign	15	66 00	43 00	388	146 75	116 25
Clark				233	251 75	144 75
Clermont	46	44 50	25 00	475	69 00	63 10
Columbiana	14	41 00	25 00	387	92 25	89 75
Coshocton	38	126 50	48 50	84	78 35	56 15
Crawford	6	50 00	50 00	200	100 00	40 00
Cuyahoga	151	144 50	76 50	203	73 00	62 25
West Cuyahoga	438			366	95 85	70 15
Darke	72	235 00	152 47	309	420 00	318 57
Erie	62	86 00	56 00	213	62 25	58 00
Fairfield				204	198 75	124 25
Fulton	15	75 50	39 50	289	85 15	58 05
Geauga	17	16 50	3 00	441	101 00	90 00
Greene				1,004	218 00	212 25
Guernsey	236	55 25	33 50	357	157 50	102 50
Hamilton	7	130 00	130 00	214	144 75	126 25
Hancock	6	50 00	50 00	159	113 75	72 75
Hardin	10	160 00	17 00	185	85 00	40 00
Harrison	23	39 00	26 00	118	28 00	24 00
Holmes	11	64 00	19 50	16	90 00	8 50
Huron	4			118	48 00	21 50
Jefferson	61	97 75	55 95	244	81 35	60 00
Lawrence				119	53 30	30 30
Licking	28	166 00	2 00	515	190 00	175 50
Logan	40	82 00	64 00	215	90 00	84 00
Lorain	87	103 00	53 00	274	105 00	101 00
Madison				141	148 00	88 25
Mahoning	221	195 25	128 25	286	53 50	49 50
Marion	192	200 00	91 00	130	120 00	77 00
Medina	33	28 00	14 00	290	51 35	40 40
Meigs	7			130	53 50	42 00
Mercer	124	96 00	70 00	524	240 00	116 00
Miami	90	50 00	50 00	255	159 00	137 00
Monroe	10	25 00	1 75	55	20 00	12 10
Morgan	39	70 00	18 50	61	56 00	36 50
Morrow				398	110 00	100 00
Muskingum	16	166 50	54 75	301	163 30	128 07
Noble	14	90 00	21 00	34	63 50	29 00
Ottawa	11	78 00	8 00	148	107 00	35 00
Paulding	38	131 50	46 50	159	122 00	38 25
Perry	1	20 50		46	73 00	30 50

TABLE II—MECHANIC ARTS AND FARM PRODUCTS—Concluded.

Counties.	Mechanic arts.			Farm products.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	49	$77 00	$20 00	198	$64 30	$39 95
Preble	....	....	....	332	155 00	101 00
Putnam	75	166 00	95 00	413	120 00	94 55
Richland	1	10 00	10 00	200	183 50	110 50
Ross	39	121 00	87 00	161	107 00	73 00
Sandusky	167	177 00	86 75	187	113 00	73 50
Scioto	....	40 00	....	54	80 00	15 39
Shelby	41	64 75	....	204	76 25	....
Stark	8	25 00	5 00	457	225 95	174 10
Summit	124	101 00	35 50	1,409	133 50	401 00
Trumbull	87	123 00	73 50	344	117 50	53 25
Tuscarawas	15	85 00	18 50	48	34 00	25 00
Union	45	51 00	29 50	265	192 00	105 60
Van Wert	70	55 00	55 00	879	....	268 00
Warren	39	75 00	47 50	261	82 00	72 25
Washington	62	212 25	52 00	27	117 00	13 70
Wayne	40	....	....	94	90 00	32 90
Wood	....	....	....	634	426 00	402 00
Wyandot	15	....	....	93	93 50	64 00
Totals	3,539	$4,957 50	$2,345 87	19,533	$7,999 15	$6,029 83

TABLE II—HORTICULTURE AND FLORICULTURE.

Counties.	Fruits.			Flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	54	$13 75	$11 00	70	$30 00	$29 00
Allen	98	20 50	42 00	15	31 75	19 80
Ashtabula	70	102 60	14 60	192	74 50	38 20
Athens	200	75 00	62 00	56	47 00	36 25
Auglaize	35	15 00	14 50	27	39 00	21 00
Belmont	40	28 00	14 25	38	25 00	15 00
Brown	300	40 00	30 00	300	70 00	60 00
Butler	233	41 00	40 50	....	....	....
Carroll	96	22 25	16 25	80	34 50	33 00
Champaign	438	135 00	85 25	28	37 00	32 00
Clark	201	151 00	62 00	202	239 50	197 50
Clermont	553	101 00	79 75	578	99 85	96 35
Columbiana	210	48 00	40 00	238	67 50	67 50
Coshocton	24	25 65	6 25	25	30 00	24 00
Crawford	50	60 00	10 00	24	50 00	11 00
Cuyahoga	137	17 35	30 10	147	41 25	37 00
West Cuyahoga	428	39 75	26 60	138	23 00	14 25
Darke	72	38 00	26 49	122	65 00	58 47
Erie	264	113 50	85 00	216	75 75	71 50
Fairfield	110	86 00	68 50	109	127 75	120 85
Fulton	155	74 10	40 05	149	45 90	29 45
Geauga	195	31 75	25 00	147	52 00	47 00
Greene	64	58 00	35 00	21	35 00	28 00
Guernsey	60	32 25	31 25	67	33 50	19 00
Hamilton	89	127 50	105 50	26	111 00	111 00
Hancock	57	42 00	19 00	7	22 50	10 00
Hardin	58	25 00	10 75	33	50 00	16 60
Harrison	106	22 00	16 00	....	3 00	....
Holmes	1	19 20	1 00	10	19 50	3 50
Huron	76	41 00	20 00	8	14 00	50
Jefferson	57	22 80	7 08	144	36 00	26 10
Lawrence	227	77 70	46 60	41	21 70	12 30
Licking	133	121 00	96 50	25	49 00	26 00
Logan	14	26 25	7 25	96	94 50	31 75
Lorain	217	108 00	102 20	44	16 50	12 50
Madison	203	90 00	65 00	31	43 00	27 00
Mahoning	312	38 00	36 40	267	110 00	106 25
Marion	102	80 00	53 50	....	....	....
Medina	110	23 70	19 95	93	25 90	17 90
Meigs	16	8 00	6 00	4	9 50	4 50
Mercer	166	36 00	28 00	178	64 00	56 00
Miami	369	143 00	120 00	130	53 00	52 00
Monroe	35	15 00	4 65	4	30 00	28 00
Morgan	67	28 00	11 75	....	9 00	....
Morrow	200	75 00	63 00	60	40 00	40 00
Muskingum	194	223 30	118 45	7	50 00	41 75
Noble	3	18 00	4 00	....	....	....
Ottawa	82	79 00	44 50	12	15 00	2 50
Paulding	105	54 95	23 25	10	15 50	4 75
Perry	35	33 75	19 75	13	14 50	3 25

TABLE II—HORTICULTURE AND FLORICULTURE—Continued.

Counties.	Fruits.			Flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	158	$47 70	$35 00	125	$63 60	$52 90
Preble	70	26 00	16 00	222	28 00	28 00
Putnam	70	17 00	13 60	13	17 00	15 00
Richland	126	98 50	55 50	9	23 00	11 00
Ross	118	126 00	74 00	71	99 00	86 00
Sandusky	27	37 00	11 50	170	56 00	54 50
Scioto	90	53 25	30 75	....	17 50	....
Shelby	57	51 75	....	13	27 50	....
Stark	82	266 75	81 00	189	152 50	134 10
Summit	570	113 00	118 75	206	179 50	172 25
Trumbull	67	49 75	31 75	208	83 75	80 75
Tuscarawas	155	55 00	40 00	109	50 00	21 00
Union	126	19 00	9 60	37	55 00	35 50
Van Wert	547	65 00	65 00	....	....	....
Warren	175	64 00	62 50	74	28 00	24 00
Washington	42	26 65	9 95	37	24 00	11 80
Wayne	15	40 00	5 00	22	50 00	32 00
Wood	352	80 00	71 00	90	50 00	46 00
Wyandot	18	23 50	10 00	11	33 00	8 75
Totals	9,986	$4,207 45	$2,687 27	5,838	$3,329 20	$2,553 82

TABLE II—DOMESTIC PRODUCTS AND FINE ARTS—Continued.

Counties.	Pickles, canned fruit, jellies, etc.			Fine arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	397	$37 00	$36 50	60	$28 50	$24 50
Allen	304	54 00	52 90	221	85 50	60 50
Ashtabula	333	56 50	51 35	160	101 00	89 25
Athens	33	16 00	16 00	27	36 00	18 00
Auglaize	410	55 00	55 00	216	78 00	78 00
Belmont	75	24 00	10 50	14	24 00	6 00
Brown	400	75 00	60 00	15	12 00	15 00
Butler	604	69 00	68 00	269	155 00	151 00
Carroll	162	31 25	25 75	33	25 00	23 00
Champaign	482	71 25	67 50	257	71 00	70 00
Clark	313	150 50	126 50	196	185 00	208 00
Clermont	667	71 00	67 95	110	53 00	50 00
Columbiana	305	45 00	43 00	12	21 50	14 50
Coshocton	24	20 50	20 50	86	135 75	64 75
Crawford	75	60 00	20 00	30	100 00	50 00
Cuyahoga	69	12 50	9 00	174	62 25	56 50
West Cuyahoga	254	27 95	22 95	28	16 25	9 00
Darke	73	42 00	40 93	144	83 00	73 80
Erie	106	38 50	27 75	184	170 00	81 25
Fairfield	119	62 00	52 50	237	233 00	215 00
Fulton	293	39 90	30 75	97	114 25	70 75
Geauga	182	29 00	27 00	109	47 50	46 00
Greene	108	38 00	35 00	57	50 00	39 00
Guernsey	65	21 00	23 00	63	25 50	7 50
Hamilton	196	65 50	60 50	169	137 00	125 50
Hancock	157	46 50	43 25	117	302 25	211 25
Hardin	110	45 00	40 00	112	90 00	78 00
Harrison	192	22 00	20 00	17	50 00	25 00
Holmes	27	38 40	8 80	7	53 75	4 50
Huron	67	22 00	15 50	12	28 00	6 00
Jefferson	765	81 00	63 40	132	72 10	40 00
Lawrence	246	49 00	37 65	35	23 75	11 50
Licking	304	121 00	119 00	200	160 50	150 50
Logan	381	21 00	101 50	336	217 00	211 50
Lorain	101	35 00	28 00	105	60 00	23 00
Madison	165	88 25	71 50	64	66 50	48 50
Mahoning	....	....	....	113	100 25	78 00
Marion	270	75 00	34 50	110	90 00	45 00
Medina	187	22 70	29 30	63	70 85	40 85
Meigs	127	32 50	29 00	6	17 00	8 50
Mercer	204	36 00	29 00	90	104 00	76 00
Miami	381	87 00	83 00	278	217 50	204 00
Monroe	73	18 00	6 95	5	10 00	90
Morgan	69	22 50	19 00	35	29 75	13 00
Morrow	250	40 00	30 00	50	75 00	60 00
Muskingum	31	13 00	10 12	95	161 00	98 75
Noble	45	40 00	35 00	4	13 00	3 00
Ottawa	....	....	....	....	....	....
Paulding	139	36 30	19 05	41	96 55	24 30
Perry	32	29 25	5 00	7	21 50	3 25

TABLE II—DOMESTIC PRODUCTS AND FINE ARTS—Concluded.

Counties.	Pickles, canned fruit, jellies, etc.			Fine arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	170	$33 00	$25 80	34	$41 00	$20 50
Preble	52	70 00	35 00	150	68 00	58 00
Putnam	628	78 00	73 75	165	86 00	72 35
Richland	3	16 00	11 00	24	70 50	23 00
Ross	23	17 00	15 00	130	91 00	86 00
Sandusky	164	48 00	40 25	117	85 00	60 00
Scioto	20	50 00	3 75	25	146 50	4 50
Shelby	172	41 50	....	57	87 75	....
Stark	359	98 15	93 50	165	245 00	202 00
Summit	562	99 50	80 50	356	139 50	130 00
Trumbull	192	35 00	22 50	149	63 50	46 50
Tuscarawas	232	60 00	45 00	168	184 00	142 00
Union	79	50 00	22 20	85	73 00	52 25
Van Wert	571	84 00	84 00	176	103 00	103 00
Warren	228	30 00	29 50	79	70 00	61 00
Washington	165	72 70	45 30	55	109 25	42 00
Wayne	70	40 00	21 80	60	60 00	21 00
Wood	320	65 00	45 00	260	140 00	110 00
Wyandot	22	45 00	9 50	74	23 75	53 75
Totals	14,404	$3,263 60	$2,642 70	7,331	$6,067 00	$4,399 95

TABLE II—TEXTILE FABRICS AND NON-ENUMERATED.

Counties.	Textile fabrics.			Non-enumerated.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	532	$141 00	$128 25	....	....	....
Allen	375	214 25	110 00	....	....	....
Ashtabula	427	164 75	104 30	82	$135 00	$77 30
Athens	113	55 00	24 50	72	....	19 75
Auglaize	636	120 00	120 00	....	....	....
Belmont	105	35 00	40 75	24	179 00	....
Brown	300	90 00	80 00	....	....	7 75
Butler	1,168	210 50	204 50	16	23 00	23 00
Carroll	491	76 25	75 25	169	....	7 25
Champaign	492	131 75	114 25	....	....	....
Clark	374	283 00	203 00	....	....	....
Clermont	731	148 00	129 00	6	50 00	46 00
Columbiana	191	71 75	69 00	....	....	....
Coshocton	140	80 50	55 00	608	....	111 45
Crawford	300	150 00	75 00	....	....	....
Cuyahoga	394	93 01	69 25	....	....	....
West Cuyahoga	273	74 85	54 00	78	11 90	11 90
Darke	485	162 00	124 15	....	....	....
Erie	312	205 50	139 00	51	68 75	5 50
Fairfield	425	221 50	207 25	....	....	....
Fulton	595	147 65	107 55	353	122 35	75 60
Geauga	652	113 00	110 00	....	....	....
Greene	776	130 00	127 00	....	....	....
Guernsey	182	57 50	40 50	31	50 00	48 50
Hamilton	389	141 75	140 75	....	539 90	539 90
Hancock	396	213 00	151 25	....	....	....
Hardin	142	120 00	52 40	20	25 00	5 00
Harrison	357	90 00	52 00	79	58 00	47 00
Holmes	78	93 00	27 80	14	19 50	6 50
Huron	118	70 00	28 50	20	97 00	62 00
Jefferson	389	122 00	100 00	51	....	40 00
Lawrence	155	58 45	43 00	....	....	....
Licking	547	301 00	242 25	75	19 50	18 00
Logan	602	343 50	341 00	66	90 00	25 00
Lorain	288	95 00	61 00	64	23 00	4 00
Madison	204	156 60	77 60	7	12 00	7 50
Mahoning	273	75 75	59 00	14	....	....
Marion	347	175 00	141 00	50	....	....
Medina	461	160 90	105 80	15	....	4 40
Meigs	65	44 00	33 25	....	....	....
Mercer	664	246 00	218 00	....	....	....
Miami	1,036	316 50	302 00	145	300 00	226 00
Monroe	101	40 00	12 55	108	....	11 75
Morgan	52	38 50	25 00	18	33 50	10 50
Morrow	400	250 00	188 00	75	50 00	32 90
Muskingum	144	79 25	62 12	4	20 00	6 75
Noble	17	36 00	17 75	77	57 50	47 00
Ottawa	36	78 00	12 50	....	....	....
Paulding	412	175 15	122 15	....	....	....
Perry	22	58 50	8 25	....	....	....

TABLE II– TEXTILE FABRICS AND NON-ENUMERATED—Concluded.

Counties.	Textile fabrics.			Non-enumerated.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Portage	324	$91 95	$68 00	....	....	....
Preble	....	....	....	375	$300 00	$150 00
Putnam	820	259 00	173 40	50	133 00	85 70
Richland	137	109 50	66 00	25	251 00	1 00
Ross	533	243 00	217 00	34	130 00	88 00
Sandusky	350	197 00	122 00	....	....	....
Scioto	100	116 75	56 25	....	....	....
Shelby	121	127 25	....	....	....	....
Stark	502	286 00	162 05	....	170 75	54 00
Summit	563	117 25	108 20	69	31 50	73 54
Trumbull	554	118 50	104 50	....	....	....
Tuscarawas	790	154 00	135 00	31	....	6 27
Union	131	124 00	85 95	8	18 00	14 50
Van Wert	712	269 00	269 00	....	....	....
Warren	539	155 00	133 00	....	....	....
Washington	142	112 75	49 65	29	34 60	8 90
Wayne	290	300 00	150 15	10	50 00	3 00
Wood	815	242 00	142 00	138	46 00	8 00
Wyandot	229	82 00	17 25	4	88 00	16 00
Totals	26,306	$9,859 56	$7,195 82	3,165	$3,237 75	$2,037 11

TABLE III—RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1897.

Counties	Amount received from gate admissions.	Amount received from entry fees.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.
Adams	$1,555 70	$86 75	$224 05	$653 69	$1,293 75	$390 00	$800 00
Allen	1,537 30	272 90	446 00	1,769 02	2 676 52	419 01	931 05
Ashtabula	2,475 61	410 00	858 39	430 00	2,204 55	100 00	1,179 38
Athens	1,672 35	58 00	231 50	210 60	1,276 50	25 00	866 06
Auglaize	2,143 70	341 00	640 45	479 82	2,475 00	......	1,225 27
Belmont	833 70	23 60	52 50	645 00	480 39	394 86	686 18
Brown	2,252 71	99 00	372 88	597 13	1,613 85	64 30	1,389 96
Butler	6,084 70	697 50	1,732 21	9,506 15	4,753 00	......	11 515 94
Carroll	1,717 10	568 70	689 86	......	1,801 60	55 00	1,113 70
Champaign	3,626 88	1,190 00	570 00	738 68	3,925 00	363 67	1,258 55
Clark	2,230 62	1,075 57	1,081 80	2,276 75	4,408 25	......	2,786 49
Clermont	2,200 95	189 80	510 78	335 53	1,939 40	113 83	1,084 32
Clinton	......	......	......	......	......	......	......
Columbiana	2,179 90	382 50	287 00	3,115 88	2,107 25	......	3,420 14
Coshocton	5,622 75	1,276 89	929 50	162 00	3,968 40	213 15	1,874 20
Crawford	1,327 05	304 80	322 00	110 00	1,357 74	......	706 11
Cuyahoga	1,988 10	227 60	309 75	104 83	932 25	398 43	1,254 87
West Cuyahoga	938 75	335 85	261 00	2,201 95	1,846 20	1,170 84	812 05
Darke	5,045 65	916 25	861 25	930 01	3,722 50	150 00	3,493 26
Erie	*2,312 69	......	......	3,781 13	2,055 00	44 41	3,668 70
Fairfield	5,735 00	1,510 95	1,315 00	1,553 00	4,341 35	201 15	1,670 40
Fulton	2,222 90	158 90	464 90	668 98	1,655 20	158 00	1,014 80
Geauga	2,259 00	229 00	501 00	408 00	1,795 00	......	1,174 00
Greene	2 499 21	539 10	583 75	289 98	2 547 15	475 00	686 35
Guernsey	1,855 91	379 00	154 00	754 82	1,342 70	875 40	719 73
Hamilton	5,891 75	1,191 30	2,159 75	552 24	5,214 40	316 40	4,227 59
Hancock	1,784 00	180 75	639 40	1,569 41	2,780 75	400 00	2,414 00
Hardin	1,930 00	84 00	991 25	289 39	898 05	......	2,361 31
Harrison	1,500 00	250 00	125 00	184 71	1,500 00	......	169 94
Holmes	646 25	60 50	150 70	290 71	759 00	......	384 00
Huron	449 75	......	87 00	354 00	214 00	......	568 00
Jefferson	994 20	492 30	225 00	394 15	1,703 53	320 52	270 00
Lawrence	246 50	188 06	......	382 50	360 25	90 70	310 21
Licking	3,558 65	1,157 65	1,023 50	405 00	4,324 75	573 17	1,943 99
Logan	2,739 18	420 50	894 53	628 92	3,276 00	......	1,301 45
Lorain	3,548 28	788 00	782 85	986 97	1,506 65	1,756 08	2 703 12
Madison	3,255 43	1,092 59	542 50	340 32	3,346 60	......	1,804 49

TABLE III—RECEIPTS, DISBURSEMENTS, ETC.—Concluded.

Counties.	Amount received from gate admissions.	Amount received from entry fees.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.
Mahoning	$3,832 50	$215 30	$1,041 41	$1,085 74	$2.900 00	$150 00	$3,122 00
Marion	2,248 75	327 00	516 75	270 86	2,180 46	....	1,182 90
Medina	2,028 50	270 85	306 85	185 29	1,742 08	169 86	677 47
Meigs	1,353 08	271 55	265 75	....	1,226 25	....	643 00
Mercer	3,493 25	511 00	901 07	607 38	2,836 65	1,124 55	1.536 25
Miami	4,797 55	949 10	854 50	1,322 59	4,621 00	250 00	1,903 60
Monroe	1,490 86	444 00	167 50	446 39	1,363 65	143 35	957 65
Morgan	933 37	70 50	127 57	241 86	754 25	134 97	488 18
Morrow	2,268 50	1.281 55	417 00	1.493 63	2,983 90	154 00	2,322 78
Muskingum	2,978 16	1 236 78	544 00	6,241 78	3,775 67	4,330 12	2,894 93
Noble	584 00	200 50	66 60	37 00	653 75	....	271 66
Ottawa	200 45	101 25	30 50	....	147 00	63 49	117 26
Paulding	1,609 95	307 48	239 37	502 06	831 75	....	1,825 36
Perry	762 30	1,399 67	428 60	635 88	2,939 00	213 58	672 68
Portage	1,743 75	644 19	396 90	663 20	1,907 40	39 24	1,831 74
Preble	3.352 40	267 10	726 25	2,067 67	2,769 00	300 00	2,094 00
Putnam	4,055 75	790 65	1,254 51	1,087 23	3,527 00	129 00	3,196 73
Richland	1 067 00	930 80	341 00	501 27	1,957 50	91 08	762 74
Ross	3,863 75	†2,403 90	....	464 28	4,207 50	....	2,524 43
Sandusky	2,464 65	368 50	499 50	282 70	2,541 00	....	1.010 31
Scioto	780 45	65 57	273 00	121 45	351 61	....	853 96
Shelby	1,705 20	526 10	348 50	....	1,018 75	....	1 596 94
Stark	3,204 25	745 23	1,287 50	1,331 38	3,369 45	327 60	3,072 88
Summit	6,122 69	1,349 45	1,498 00	1,221 80	4 215 49	519 86	5,311 17
Trumbull	2,273 56	464 50	624 40	1,222 77	2.772 75	....	1,866 89
Tuscarawas	1,596 25	506 35	979 85	748 95	2,435 67	40 00	1,328 49
Union	2,505 60	25 00	1,006 99	....	2,203 45	....	1,134 14
Van Wert	4,690 90	337 90	1,136 98	874 64	4.376 79	275 13	2,110 46
Warren	2,335 00	850 00	510 00	143 77	1,820 00	....	1,691 24
Washington	1.998 70	600 00	979 91	403 00	....	214 07	3,786 60
Wayne	1.945 05	1,003 45	258 13	872 35	2,195 50	348 10	1.458 37
Wood	4,880 00	1,816 20	1.639 50	378 00	5,412 75	1.650 00	1,783 18
Wyandot	962 00	204 93	260 00	95 40	579 08	943 25	....
Totals	$168,992 39	$39,065 66	$40 939 44	$63,681 59	$158.918 63	$20 580 70	$119,829 60

*Includes entry fees, booth rents and privilege permits. †Includes booth rents and privilege permits.

OFFICIAL REPORT OF THE SECRETARY

OF THE

OHIO STATE BOARD OF AGRICULTURE

ON

COMMERCIAL FERTILIZERS.

COLUMBUS, OHIO, December 31, 1897.

To the Manufacturers, Dealers and Consumers of Commercial Fertilizers :

Agreeable to the requirement of the Fertilizer Law of Ohio, I herewith present " a correct report of all analyses made " of commercial fertilizers by the State Chemist, "and certificates filed" by the manufacturers or general agents, guaranteeing ingredients, for the year 1897.

The following tables of analyses and valuations of commercial fertilizers include all brands that have been properly licensed to sell in the state of Ohio, and that have been found on the market by the deputy inspector of fertilizers. An additional table will be found giving a list of brands which have been properly licensed, but not found on the market. If other brands have been sold in this state, they have not been found on the market.

All licenses expire December 31, 1897, and no commercial fertilizers can be legally sold or offered for sale in the state after this date, until fees are paid and licenses secured by the manufacturers or agents for the year ending December 31, 1898 ; so the agent who purposes handling, selling or dealing in commercial fertilizers in 1898, will do well to see that the manufacturer has paid license on each and every brand he offers for sale, for if the manufacturer fails to do this, the " importer or party who causes it to be sold or offered for sale within the state of Ohio," will be held for the same or subjected to the payment of the fines prescribed in section 4446*f* of the fertilizer law. To avoid all possibility of trouble, the agent handling commercial fertilizers should see that the manufacturer has complied with the law before goods are offered for sale. Whether or not this has been done can be learned from the manufacturer, or from the Secretary of the State Board of Agriculture, Columbus, O.

All dealers in and purchasers of commercial fertilizer are interested in seeing that the law is enforced. If they know of any brands offered for sale during 1897 not appearing on the following lists, they will confer a favor by notifying the Secretary. In a few cases goods are shipped into the state by parties who are ignorant of the law, and who will promptly comply with its requirements as soon as they receive the necessary information.

By the co-operation of farmers using commercial fertilizers and of manufacturers and agents who comply with the law, I feel confident that but few will be able to evade the law, and these only for a short time. The penalties prescribed by law and the injury to the reputation of the manufacturer who seeks to evade it are so great that he cannot afford to neglect to comply with its reasonable requirements.

Manufacturers when applying for licenses will facilitate the work of sampling their goods by sending to the Secretary lists of their agents.

Manufacturers intending to place their goods on sale in Ohio should send to the Secretary of the Ohio State Board of Agriculture for blanks on which to make formal application for license and claims for fertilizers.

SAMPLES SENT BY MANUFACTURERS.

To comply with the law, manufacturers should always send samples of commercial fertilizers to the Secretary of the State Board of Agriculture, when making application for license, that they may be used in comparison with those drawn on the market for analysis.

ADVANCE REPORTS.

It is my custom to send advance reports to manufacturers to give them an opportunity to check the chemist's work before the results are published in the annual report, in order to insure accuracy. The analyses reported will be published, unless some errors are shown. It is not sufficient to claim the analyses are wrong because they show lower percentages than the manufacturers claim; this is not proof or evidence of error. The object of sending these advance reports is to eliminate errors should they exist. Where there are doubts about the findings, the chemist will retest samples, and will, if requested, send parts of the samples in question to any member of the Association of Official Agricultural Chemists, of which Prof. Harvey W. Wiley, of Washington, D. C., is Secretary, but the manufacturers making such requests must pay the official chemists they select for reanalyses.

REGULAR ANALYSES.

The work of sampling and analyzing fertilizers is done in accordance with the fertilizer law of the state, and under this law the official chemist analyzes such samples as are furnished him by the Secretary of the State Board of Agriculture.

Samples are drawn from the open markets of the state and from stocks purchased by consumers of commercial fertilizers by my duly authorized Deputy Inspector, Mr. L. M. Coughenour. Great care is taken in this work and samples are drawn from every brand that can be found in the state by diligent search and inquiry, covering a period from the latter part of March until the early part of December. It is regretted that samples of all licensed goods could not be found for analysis, but until manufacturers and dealers give more care to the matter of informing me where goods can be found, perfect results cannot be obtained. With the information possessed by the Secretary and his Deputy Inspector, the field has been worked diligently and faithfully.

SPECIAL ANALYSES.

I frequently have requests from farmers and agents to make special analyses of samples of commercial fertilizers. I am obliged to say that the law does not provide for these, and I have no fund for paying for the work. If it will be an accommodation, I will have special analyses made by the State Chemist of such samples as may be sent me with the proper fees, as follows: "Superphosphates"—ammonia, five dollars ($5); total phosphoric acid, five dollars ($5); insoluble phosphoric acid, five dollars ($5); potash, five dollars ($5); or a total of twenty dollars ($20) if all three ingredients are claimed. "Bones"—ammonia, five dollars ($5); total phosphoric acid, five dollars ($5); potash, five dollars ($5); or a total of fifteen dollars ($15) if all three ingredients are claimed; or, in other words, five dollars ($5) for each and every determination.

VALUATIONS OF COMMERCIAL FERTILIZERS.

Great care has been given to the subject of valuations and the figures used are the result of a careful and painstaking study of the market quotations of fertilizer ingredients and the cost of mixing and placing on the market of well prepared commercial fertilizers.

Of course it is impossible in any system of commercial valuations to fix prices at which goods are or can be sold, uniformly and under all circumstances and conditions. The two objects sought, however, are, first—to give a uniform scale for commercial comparison; and, second—to give, as nearly as possible, a reasonably correct average price at which the farmer should have been able to buy good fertilizers in 1897.

It is always necessary to bear in mind that the values attached to these fertilizers express their "*commercial value*," that is, the cost at which the materials should be put together and sold at a fair profit; and is not necessary indicative in any way of their *agricultural value*, which, of course, depends on the nature of the soils and needs of the crops grown.

VALUES FOR 1897.

Ammonia, 12½ cents per pound or $2.50 per unit.

Available phosphoric acid, 5 cents per pound or $1.00 per unit.

Insoluble phosphoric acid in *bone*, 3 cents per pound or 60 cents per unit.

Potash, as sulphate, 5¾ cents per pound or $1.15 per unit.

Potash, as muriate, 5¼ cents per pound or $1.05 per unit.

Phosphoric acid in "fine" bone, 4 cents per pound or 80 cents per unit.

Phosphoric acid in "medium" bone, 3 cents per pound or 60 cents per unit.

On the last page of this report will be found the fertilizer law of the state, in force at this time.

W. W. MILLER, *Secretary.*

NOTE—"Unit" is a trade expression used in speaking of the ingredients of commercial fertilizers and means one per centum of a ton, or twenty pounds; e. g. ammonia 12½ cents per pound or $2.50 per unit—$2.50 for twenty pounds.

TABULATED ANALYSES AND VALUATIONS OF COMMERCIAL FERTILIZERS FOR THE YEAR ENDING DECEMBER 31, 1897.

All analyses are made by Prof. N. W. Lord, Ohio State University, Columbus, Ohio, Official Chemist. The valuations are based on the average commercial value of the ingredients in Ohio, as sold this year, viz: Ammonia, twelve and one-half cents ($12\frac{1}{2}$c) per pound, or two dollars and fifty cents ($2.50) per unit; available phosphoric acid, five cents (5c) per pound or one dollar ($1.00) per unit; insoluble phosphoric acid from *bone*, three cents (3c) per pound or sixty cents (60c) per unit; potash $K^2 O$, as muriate, five and one-fourth cents ($5\frac{1}{4}$c) per pound or one dollar and five cents ($1.05) per unit: as sulphate, five and three-fourths cents ($5\frac{3}{4}$c) per pound or one dollar and fifteen cents ($1.15) per unit.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.						
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
1	Homestead a Bone Black Fertilizer	Claimed	2.75		9.00					1.75			1
	Michigan Carbon Works, Detroit, Mich.	Found	3.40	$8 50	11.64	$11 64	0.13		11.77	2.84	$2 98	$23 12	
2	Jarves Drill Phosphate	Claimed	1.25		8.00				10.00	0.75			2
	Michigan Carbon Works, Detroit, Mich.	Found	1.90	4 75	9.20	9 20	0.64		9.84	1.20	1 26	15 21	
4	V. C. C. Co.'s Dissolved Bone and Potash	Claimed			10.00		1.00		11.00	2.00			4
	Vir.-Car. Chem. Co., Richmond, Va	Found			11.32	11 32	3.39		14.71	1.68	1 76	13 03	
5	Eureka High Grade Bone Phosphate	Claimed			12.00		1.00		13.00				5
	Vir.-Car. Chem. Co., Richmond, Va.	Found			12.21	12 21	1.50		13.71			12 21	
6	Bone and Potash	Claimed			8.00				10.00	2.50			6
	The Standard Fert. Co., Boston, Mass.	Found			9.68	9 68	2.30		11.98	*2.62	3 01	12 69	
7	Dissolved Bone Phosphate	Claimed			10.00		2.00		12.00				7
	The Standard Fert. Co., Boston, Mass.	Found			11.64	11 64	1.53		13.17			11 64	

8	**Lake Erie Fish Guano**	Claimed	2.00	....	10.00	....	1.00	....	11.00	1.00	....	....	8
	The Jarecki Chem. Co., Sandusky, O.	Found	2.35	$5 88	11.50	$11 50	1.21	....	12.71	*2.80	$3 22	$20 60	
9	**Superphosphate**	Claimed	1.50	....	8.00	....	1.00	....	9.00	1.00	....	....	9
	The Jarecki Chem. Co., Sandusky, O.	Found	1.15	2 88	12.22	12 22	1.53	....	13.75	*0,93	1 07	16 17	
10	**C. O. D. Phosphate**	Claimed	....	....	14.00	....	1.00	....	15.00	....	....	....	10
	The Jarecki Chem. Co., Sandusky, O.	Found	....	....	15.48	15 48	2 81	....	18.29	....	....	15 48	
11	**Fish and Potash, Tobacco and Potato Food**	Claimed	2.00	....	6.00	....	1.00	....	7.00	3.50	....	....	11
	The Jarecki Chem. Co., Sandusky, O.	Found	1.75	4 38	10.07	10 07	1.85	....	11.92	4.09	4 29	18 74	
12	**Dissolved Bone with Potash**	Claimed	1.00	....	8.00	....	2.00	....	10.00	2.15	....	....	12
	The Bradley Fert. Co., Boston, Mass	Found	1.40	3 50	8.68	8 68	1.92	....	10.60	2.41	2 53	14 71	
13	**Niagara Phosphate**	Claimed	1.00	....	7.00	....	1.00	....	8.00	1.08	....	....	13
	The Bradley Fert. Co., Boston, Mass.	Found	1.40	3 50	8 10	8 10	1.40	....	9.56	1.37	1 43	13 03	
14	**Acid Phosphate**	Claimed	....	....	10.00	....	2.00	....	12.00	....	....	....	14
	The Bradley Fert. Co., Boston, Mass.	Found	....	....	11.33	11 33	1.46	....	12.79	....	....	11 33	
15	**Potato and Root Phosphate**	Claimed	1.00	....	8.00	....	2.00	....	10.00	2.15	....	....	15
	The Bradley Fert. Co., Boston, Mass.	Found	1.40	3 50	8.76	8 76	1.85	....	10.61	2.08	2 18	14 44	
16	**Zell's Dissolved Bone Phosphate**	Claimed	....	....	13.00	....	2.00	....	15.00	....	....	....	16
	The Zell Guano Co., Baltimore, Md.	Found	....	....	15.03	15 03	1.72	....	16.75	....	....	15 03	
17	**Homestead Potata Grower**	Claimed	2.35	....	8.50	....	0.50	....	10.00	5.00	....	....	17
	Michigan Carbon Works, Detroit, Mich.	Found	3.15	7 88	10.45	10 45	0.77	....	11.22	7.11	7 47	25 80	
18	**Perfection Fruit Grower**	Claimed	1.00	....	10 00	....	1.00	....	11.00	7.00	....	....	18
	Michigan Carbon Works, Detroit, Mich.	Found	1.25	3 12	13.49	13 49	1.66	....	15.15	6.90	7 24	23 85	
20	**Climax Phosphate**	Claimed	1.25	....	8.00	....	1.00	....	9.00	2.00	....	....	20
	The Quinnipiac Co., New York, N. Y.	Found	1.40	3 50	9.01	9 01	1.85	....	10.86	2.10	2 20	14 71	
21	**Dissolved Bone and Potash**	Claimed	....	....	10.00	....	1.00	....	13.00	2.00	....	....	21
	The Quinnipiac Co., New York, N. Y.	Found	....	....	10.23	10 23	1.72	....	11.95	2.49	2 61	12 84	

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*As sulphate. †In animal matter.

TABLE I—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
22	**Mohawk Fertilizer**..........	Claimed	1.00	....	7.00	....	1.00	....	8.00	1.00	....	....	
	The Quinnipiac Co., New York, N. Y..........	Found	1.50	$3 75	8.46	$8 46	1.59	....	10.05	1.08	$1 13	$13 34	22
23	**Special Corn and Potato Fertilizer**..........	Claimed	3.50	....	12.00	....	10.00	....	22.00	6.00	....	....	
	E. Raugh & Sons, Indianapolis, Ind..........	Found	4.75	11 88	8.70	8 70	†4.60	$2 76	13.30	4.57	4 79	28 13	23
24	**Peerless Bone**..........	Claimed	4 00	....	7.00	....	7.00	....	14.00	3.00	....	....	
	E. Raugh & Sons, Indianapolis, Ind..........	Found	2.85	7 12	8.05	8 05	†10.13	6 08	18.18	0.42	0 44	21 69	24
25	**Dissolved Bone and Potash**..........	Claimed	3.50	....	8.00	....	5.00	....	13.00	2.00	....	....	
	E. Raugh & Sons, Indianapolis, Ind..........	Found	2.00	5 00	8.24	8 24	6.40	....	14.64	2.26	2 37	15 61	25
26	**Dissolved Bone, Justice Brand**..........	Claimed	....	....	12.00	....	1.00	....	13.00	....	....	....	
	The Bradley Fert. Co., Boston, Mass..........	Found	....	....	14.71	14 71	1.15	....	15.86	....	....	14 71	26
27	**Alkaline Bone**..........	Claimed	....	....	11.00	....	1.00	....	12.00	2.43	....	....	
	The Bradley Fert. Co., Boston, Mass..........	Found	....	....	8.32	8 32	1.28	....	9.60	4.24	4 45	12 77	27
28	**Currie's Soluble Bone**..........	Claimed	0.50	....	11.00	....	1.00	....	12.00	2.50	....	....	
	The Currie Fert. Co., Louisville, Ky..........	Found	1.25	3 12	10.24	10 24	1.66	....	11.90	*2.41	2 77	16 13	28
29	**Currie's Corn and Oats, Special**..........	Claimed	1.00	....	10.00	....	2.00	....	12.00	3.50	....	....	
	The Currie Fert. Co., Louisville, Ky..........	Found	1.45	3 62	10.23	10 23	1.66	....	11.89	*3.35	3 85	17 70	29

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* As sulphate. † In animal matter.

30	**Globe Bone Dust**	Claimed	1.50	....	9.00	....	1.00	....	11.00	0.50	....	....	
	The Globe Fert. Co., Louisville, Ky.	Found	2.20	$5 50	10.05	$10 05	1.85	....	11.90	*0.75	$0 86	$16 41	30
31	**Half and Half**	Claimed	2.25	....	8.00	....	4.00	....	15.00	....	....	....	
	The W. Union Chem. Co., Cleveland, O	Found	3.10	7 75	10 66	10 66	†8 44	$5 06	19.10	....	....	23 47	31
32	**International Phosphate**	Claimed	....	....	12 00	....	2.00	....	14 00	....	....	....	
	The W. Union Chem. Co., Cleveland, O.	Found	....	....	13.62	13 62	1.98	....	15.60	....	....	13 62	32
33	**Ohio Farmer's Bone Superphosphate**	Claimed	1.50	....	9.00	....	3.00	....	13.00	1.00	....	....	
	The W. Union Chem. Co., Cleveland, O.	Found	2.40	6 00	10.58	10 58	3.07	....	13.65	0.58	0 60	17 18	33
34	**Great Eastern Corn Phosphate**	Claimed	1.00	....	8.00	....	1 00	....	....	4 00	....	....	
	The Great Eastern Fert. Co., Rutland, Vt.	Found	1.10	2 75	9.98	9 98	†1.08	0 65	11.06	3.57	3 75	17 13	34
35	**Great Eastern Wheat Special**	Claimed	2.00	....	8.00	....	1.00	....	....	2.00	....	....	
	The Great Eastern Fert. Co., Rutland, Vt.	Found	2.35	5 88	8.51	8 51	1.34	....	9.85	2.33	2 45	16 84	35
36	**Great Eastern Dissolved Bone**	Claimed	....	....	14.00	....	2.00	....	....	....	....	....	
	The Great Eastern Fert. Co., Rutland, Vt.	Found	....	....	15.35	15 35	0.90	....	16.25	....	....	15 35	36
37	**Nobsque Guano**	Claimed	1.40	....	8.00	....	1.00	....	9.00	2.00	....	....	
	The Pacific Guano Co., New York, N. Y.	Found	1.45	3 62	8.81	8 81	1.79	....	10.60	2.12	2 22	14 65	37
38	**A. No. 1 Phosphate**	Claimed	1.25	....	7.00	....	1.00	....	8.00	1.50	....	....	
	The Pacific Guano Co., New York, N. Y.	Found	1.55	3 88	9.15	9 15	1.59	....	10.74	2.14	2 24	15 27	38
39	**Dissolved Bone Phosphate of Lime**	Claimed	....	....	13.00	....	1.00	....	14.00	....	....	....	
	The Pacific Guano Co., New York, N. Y.	Found	....	....	14.71	14 71	1.79	....	16.50	....	....	14 71	39
40	**Acid Phosphate**	Claimed	....	....	10.00	....	2.00	....	12.00	....	....	....	
	The Pacific Guano Co., New York, N. Y.	Found	....	....	13.69	13 69	1.28	....	14.97	....	....	13 69	40
41	**Farmers' Favorite Brand**	Claimed	3.50	....	8.00	....	5.00	....	13.00	4.00	....	....	
	Darling & Co., Chicago, Ill.	Found	4.40	11 00	10.71	10 71	†4.47	2 68	15.18	* 4.41	5 07	29 46	41
42	**Sure Winner Brand**	Claimed	1.50	....	7.00	....	4.00	....	12.00	3.00	....	....	
	Darling & Co., Chicago, Ill.	Found	3.50	8 75	11.06	11 06	†3.33	2 00	14.39	*4.49	5 16	26 97	42

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*As sulphate. †As animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
44	**Beef, Blood and Bone**	Claimed	2.00		8.00		1.00		9.00	1.00			
	Vir.-Car. Chem. Co., Richmond, Va.	Found	2.60	$6 50	8.32	$8 32	4.73		13.05	1.45	$1 52	$16 34	44
45	**Soluble Sea Island Guano**	Claimed	2.43		8.00		1.00		9.00	1.50			
	The Rasin Fert. Co., Baltimore, Md.	Found	2.80	7 00	9.46	9 46	1.92		11.38	1.54	1 62	18 08	45
46	**Bone and Potash**	Claimed			12.00		1.00		13.00	1.25			
	The Rasin Fert. Co., Baltimore, Md.	Found			13.05	13 05	1.28		14.33	1.08	1 13	14 18	46
47	**Ammoniated Dissolved Bone**	Claimed	2.00		9.00		1.00		13.00	2.00			
	The Quinnipiac Co., New York, N. Y.	Found	2.20	5 50	9.59	9 59	1.72		11.31	2.03	2 13	17 22	47
48	**Bone and Potash**	Claimed	.25		10.00		1.00		12.00	1.25			
	The Globe Fert. Co., Louisville, Ky.	Found	0.65	1 62	12.35	12 35	0.57		12.92	*1.02	1 17	15 14	48
49	**Progress Wheat and Corn Grower**	Claimed	1.50		8.00		2.00		12.00	1.50			
	The Globe Fert. Co., Louisville, Ky.	Found	2.40	6 00	11.22	11 22	2.68		13.90	*1.04	1 20	18 42	49
50	**Bowker's Diss. Bone Phosphate with Potash**	Claimed			10.00				12.00	1.00			
	The Bowker Fert. Co., Boston and N. Y.	Found			11.20	11 20	4.47		15.67	0.81	0 85	12 05	50
51	**Bowker's Harvest Bone with Potash**	Claimed			10 00				12.00	1.00			
	The Bowker Fert. Co., Boston and N. Y.	Found			11.32	11 32	4.60		15.92	0.77	0 81	12 13	51

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*As sulphate

52	**Bowker's Superphosphate with Potash**	Claimed			10.00				12.00	1.00			
	The Bowker Fert. Co., Boston and N. Y.	Found			11.15	$11 15	4.10		15.25	1.14	$1 20	$12 35	52
53	**Bowker's Wheat Grower**	Claimed			10.00				12.00	1.00			
	The Bowker Fert. Co., Boston and N. Y.	Found			10.79	10 79	4.47		15.26	0.77	0 81	11 60	53
54	**Bowker's Ammoniated O. I. O. Phosphate**	Claimed	0.75		11.00				13.00				
	The Bowker Fert. Co., Boston and N. Y.	Found	0.95	$2 38	11.42	11 42	3.58		15.00			13 80	54
56	**Leader**	Claimed	3.50		7.00		5.00		13.00	2.00			
	McLean, Dahl & Co., Washington C. H., O.	Found	3.70	9 25	10.17	10 17	4.86		15.03	2.45	2 57	21 99	56
57	**Buckeye Amm. Bone Super Phosphate**	Claimed	3.00		9.00		2.00		11.00	1.00			
	The Cleveland Dryer Co., Cleveland, O.	Found	3.95	9 88	9.81	9 81	2.74		12.55	0.31	0 33	20 02	57
58	**Ohio Seed Maker**	Claimed	1 50		10.00				15.00				
	The Cleveland Dryer Co., Cleveland, O.	Found	1.50	3 75	11.55	11 55	3.00		14.55			15 30	58
59	**Ohio Seed Maker with Potash**	Claimed	1.50		10.00				15.00	2.00			
	The Cleveland Dryer Co., Cleveland, O.	Found	1.70	4 25	9.66	9 66	2.17		11.83	2.06	2 16	16 07	59
60	**XXX Phosphate**	Claimed			13.00				15.00				
	The Cleveland Dryer Co., Cleveland, O.	Found			13.72	13 72	1.66		15.38			13 72	60
61	**XXX Phosphate with Potash**	Claimed			12.00				14.00	5.00			
	The Cleveland Dryer Co., Cleveland, O.	Found			11.42	11 42	1.34		12.76	5.90	6 20	17 62	61
62	**Horsehead Phosphate**	Claimed			9.00				11.00				
	The Cleveland Dryer Co., Cleveland, O.	Found			11.54	11 54	1.98		13.52			11 54	62
63	**Phospho Bone**	Claimed	0.75		10.00					1.00			
	The Cleveland Dryer Co., Cleveland, O.	Found	0.95	2 38	10.97	10 97	2.87		13.84	1.31	1 37	14 72	63
64	**Square Bone**	Claimed	2.50		6.00				20.00				
	The Cleveland Dryer Co., Cleveland, O.	Found	2.95	7 38	10.13	10 13	†7.23	$4 34	17.36			21 85	64
65	**O. K.**	Claimed	6.00						16.00				
	M. Hamm & Co., Chillicothe, O.	Found	6.97	17 43	6.62	6 62	†5.82	3 49	12.43			27 54	65

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*As sulphate. †As animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of Manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
66	**Hamm's Special**	Claimed	3.00	....	....	....	....	....	15.00	2.00	....	....	
	M. Hamm & Co., Chillicothe, O.	Found	3.12	$7 80	8.37	$8 37	5.44	....	13.81	1.38	$1 44	$17 61	66
67	**Acidulated Bone**	Claimed	1.00	....	8.00	....	1.00	....	9.00	1.00	....	....	
	M. Hamm & Co., Chillicothe, O.	Found	1.25	3 12	9.78	9 78	2.49	....	12.27	*1.27	1 46	14 36	67
68	**Chicago Brand**	Claimed	2.50	....	7.00	....	4.00	....	12.00	1.00	....	....	
	Darling & Co., Chicago, Ill.	Found	3.40	8 50	10.78	10 78	†2.94	$1 76	13.78	1.93	2 03	23 07	68
70	**Baker's Diss. Bone Phosphate**	Claimed	....	....	14.00	....	1.00	....	15.00	....	....	....	
	The Chem. Co. of Canton, Baltimore, Md.	Found	....	....	15.80	15 80	0.70	....	16.50	....	....	15 80	70
71	**Baker's Special W. C. and G. Mixture**	Claimed	1.00	....	9.00	....	1.00	....	10.00	2 00	....	....	
	The Chem. Co. of Canton, Baltimore, Md.	Found	1.45	3 62	9 88	9 88	0.83	....	10.71	2.08	2 18	15 68	71
72	**Soluble Bone and Potash**	Claimed	....	....	10.00	....	2.00	....	12.00	2.00	....	....	
	The Chem. Co. of Canton, Baltimore, Md.	Found	....	....	10.23	10 23	2.41	....	11.63	2.16	2 26	12 49	72
74	**Climax Phosphate**	Claimed	1.50	....	9.00	....	2.00	....	11.00	3 00	....	....	
	Strecker Bros., Marietta, O.	Found	1.20	3 00	8.44	8 44	2.81	....	11.25	2.87	3 01	14 45	74
75	**Acme Phosphate**	Claimed	1.00	....	8.00	....	2.00	....	10.00	1.00	....	....	
	Strecker Bros., Marietta, O.	Found	0.70	1 75	6.86	6 86	2.17	....	9.03	1.85	1 94	10 55	75

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*As sulphate. †In animal matter.

76	**B. D. Sea Fowl Guano**	Claimed	2.50		8.00		2.00		10.00	1.50			
	The Bradley Fert. Co., Boston, Mass.	Found	2.55	$6 38	9.24	$9 24	2.62		11.86	1.97	$2 07	17 69	76
77	**Potato Fertilizer**	Claimed	2.50		9.00		2.00		11.00	3.25			
	The Bradley Fert. Co., Boston, Mass	Found	2.15	5 38	8.61	8 61	3.25		11.86	3.05	3 20	17 19	77
78	**Dissolved Bone Phosphate**	Claimed			10.00		2.00		12.00				
	The Cumberl'd Bone-Phos. Co., Boston, Mass	Found			12.43	12.43	0.83		13.26			12 43	78
79	**Bone and Potash**	Claimed			8.00		2.00		10.00	2.50			
	The Cumberl'd Bone-Phos. Co., Boston, Mass	Found			9.08	9 08	1.15		10.23	3.59	3 77	12 85	79
80	**Union Fertilizer for Potatoes and Tobacco**	Claimed	1.50		8.00		3.00		11.00	4.00			
	The W. U. Chemical Co., Cleveland, O.	Found	1.65	4 12	9.65	9 65	3.52		13.17	2.20	2 31	16 08	80
81	**Bull Dog Phosphate**	Claimed			10.00		2.00		12.00				
	The W. U. Chemical Co., Cleveland, O.	Found			11.67	11 67	1.92		13.59			11 67	81
83	**Ammoniated Bone with Potash**	Claimed	3.00		6.00		1.50		8.00	1.85			
	Armour Fertilizer Works, Chicago, Ill.	Found	3.60	9 00	8.88	8 88	†3.46	2 08	12.34	*2.12	2 44	22 40	83
84	**Grain Grower**	Claimed	2.00		8.00		1.50		10.00	2.00			
	Armour Fertilizer Works, Chicago, Ill.	Found	3.30	8 25	8.71	8 71	†5.68	3 41	14.39	2.03	2 13	22 50	84
85	**Defiance**	Claimed	1.00		6.00		2.00		8.00	2.00			
	The Clark's Cove Fert. Co., New York, N. Y.	Found	1.40	3 50	8.76	8 76	1.40		10.16	2.22	2 33	14 59	85
86	**King Philip Guano**	Claimed	1.50		6.00		1.00		7.00	3.00			
	The Clark's Cove Fert. Co., New York, N. Y.	Found	1.90	4 75	6.39	6 39	1.72		8.11	3.12	3 28	14 42	86
87	**Triumph Bone and Potash**	Claimed			10.00		1.00		11.00	2.00			
	The Clark's Cove Fert. Co., New York, N. Y.	Found			11.07	11 07	1.72		12.79	2.43	2 55	13 62	87
88	**Sovereign Acid Phosphate**	Claimed			12.00		1.00		13.00				
	The Clark's Cove Fert. Co., New York, N. Y.	Found			15.16	15 16	0.83		15.99			15 16	88
89	**Tobacco and Potato Grower**	Claimed	5.50		8.25		4.25		12.50	6.00			
	The Jones Fertilizing Co., Cincinnati, O	Found	5.15	12.88	7.59	7 59	†5.81	3 49	13.40	*6.09	7 00	30.96	89

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*As sulphate. †In animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
90	**Special Tobacco Grower**	Claimed	3.50	....	8.75	....	4.25	....	13.00	3.25	....	....	
	The Jones Fert. Co., Cincinnati, O...........	Found	3.50	$9 12	7.76	$7 76	†3.24	$1 94	11.00	*3.03	$3 48	$22 30	90
91	**Miami Valley Phosphate**..............................	Claimed	3.40	....	9.00	....	4.00	....	13 00	2.75	....	....	
	The Jones Fert. Co., Cincinnati, O	Found	3.65	9 12	7.85	7 85	†4.73	2 84	12.58	*2.89	3 32	23 13	91
92	**Jones' Reliable Phosphate**..........................	Claimed	2.50	....	7.50	....	2.50	....	10.00	1.25	....	....	
	The Jones Fert. Co., Cincinnati, O	Found	3.50	8 50	6.88	6 88	†3.52	2 11	10.40	*1.50	1 73	19 22	92
93	**Jewel Phosphate**	Claimed	1.50	....	9.00	....	3.00	....	12.00	....	....	....	
	The Jones Fert. Co., Cincinnati, O	Found	2.35	5 88	8.73	8 73	9.56	....	18.29	....	....	14 61	93
95	**Twenty-six Dollar Phosphate**	Claimed	2.00	....	6.00	....	3.00	....	9.00	....	....	....	
	North Western Fert. Co., Chicago, Ill......	Found	2.90	7 25	7.85	7 85	4.86	....	12.71	....	....	15 10	95
96	**Waring's T. and P. Superphosphate**	Claimed	....	....	13.00	....	2.00	....	15.00	....	....	....	
	J. W. Hunter, Baltimore, Md	Found	....	....	15.41	15 41	1.79	....	17.20	....	....	15 41	96
97	**Champion with Potash**	Claimed	3.00	....	8.50	....	....	....	11.00	4.00	....	....	
	The Newburgh Fert. Co., Cleveland, O	Found	2.90	7 25	10.36	10 36	1.02	....	11.38	4.30	4 52	22 13	97
98	**Keystone Bone Phosphate**................	Claimed	1.00	....	9.00	....	2.00	....	11.00	1.00	....	....	
	S. M. Hess & Bros., Philadelphia, Pa..	Found	1.30	3 25	11.68	11 68	0.90	....	12.58	1.33	1 39	16 32	98

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*As sulphate. †In animal matter.

99	**Ammoniated Dissolved Bone**	Claimed	4.00	....	8.00	....	1.00	....	10.00	4.00	....	....	
	Jas. McCallum & Co., Dayton, O.	Found	2.30	$5 75	11.83	$11 83	4.35	....	16.18	2.08	$2 18	$10 76	99
100	**Spot Cash**	Claimed	2.00	....	8.00	....	1.00	....	10.00	2.00	....	....	
	Jas. McCallum & Co., Dayton, O.	Found	1.60	4 00	12.78	12 78	3.84	....	16.62	2.74	2 88	19 66	100
101	**Miami Phosphate**	Claimed	1.00	....	12.00	....	1.00	....	14.00	1.00	....	....	
	Jas. McCallum & Co., Dayton, O.	Found	1.15	2 88	12.87	12 87	2.74	....	15.61	2.08	2 18	17 93	101
102	**Special Compound for Potatoes and Vegetables**	Claimed	3.00	....	8.00	....	2.00	....	10.00	4.00	....	....	
	The Zell Guano Co, Baltimore, Md.	Found	3 15	7 88	10.01	10 01	1.66	....	11.67	4 34	4 56	22 45	102
103	**Zell's Calvert Guano**	Claimed	0.75	....	9.00	....	2.00	....	11.00	1.50	....	....	
	The Zell Guano Co., Baltimore, Md.	Found	1.05	2 62	9.77	9 77	2.81	....	12.58	1.81	1 90	14 29	103
104	**Dissolved Bone Black, Wheat Special**	Claimed	....	....	16.00	....	1.00	....	17.00	....	....	....	
	The Jarecki Chemical Co., Sandusky, O.	Found	....	....	14.64	14 64	1.79	....	16.43	....	....	14 64	104
106	**Great Eastern Vegetable, Vine and Tobacco**	Claimed	2.50	....	8.00	....	1.00	....	....	3.25	....	....	
	The Great Eastern Fert. Co., Rutland, Vt.	Found	2.65	6 62	9.54	9 54	0.96	....	10.50	4.38	4 60	20 76	106
107	**Soluble Bone and Potash**	Claimed	....	....	11.00	....	2.00	....	....	2.00	....	....	
	The Great Eastern Fert. Co., Rutland, Vt.	Found	....	....	11.56	11 56	0.64	....	12.20	2.28	2 39	13 95	107
108	**Sure Crop Phosphate**	Claimed	1.00	....	8.00	....	2.00	....	10.00	1.00	....	....	
	The Bowker Fert. Co, Boston, Mass	Found	1.25	3 12	9.46	9 46	3.33	....	12.79	1.27	1 33	13 91	108
109	**Urbana Acidulated Bone**	Claimed	....	....	13.00	....	1.00	....	16.00	....	....	....	
	The Loudenback Fert. Co., Urbana, O.	Found	....	....	13.36	13 36	0.57	....	13.93	....	....	13 36	109
110	**Urbana Bone Phos. and Potash**	Claimed	1.00	....	9.00	....	1.00	....	10.00	1.00	....	....	
	The Loudenback Fert. Co., Urbana, O.	Found	0.95	2 38	10.28	10 28	1.79	....	12.07	1.00	1 05	13 71	110
111	**Wheat, Oats and Barley Phosphate**	Claimed	1.50	....	8.00	....	1.00	....	9.00	2.00	....	....	
	The Milsom Rend. and Fert. Co., Buffalo, N.Y.	Found	1.75	4 38	8.24	8 24	1.28	....	9.52	1.72	1 80	14 42	111
112	**Erie King**	Claimed	1.00	....	7.00	....	2.00	....	9.00	2.00	....	....	
	The Milsom Rend. and Fert. Co., Buffalo, N.Y.	Found	1.03	2 58	7.73	7 73	1.08	....	8.81	2.04	2 14	12 45	112

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES.—Continued.

Record number.	Name of fertilizer and address Manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
113	**Buffalo Guano**..........	Claimed	1.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Milsom Rend. and Fert. Co., Buffalo, N. Y.	Found	1.40	$3 50	9 01	$9 01	1.92	....	10.93	2 60	$2 73	$15 24	113
114	**Dissolved Bone**..........	Claimed	....	....	11.00	....	1.37	....	12.37	....	....	....	
	The Milsom Rend. and Fert. Co., Buffalo, N. Y.	Found	....	....	13.07	13 07	0.35	....	13.42	....	....	13 07	114
115	**Corn Fertilizer**..........	Claimed	3.00	....	8.00	....	1.00	....	9 00	2 00	....	....	
	The Milsom Rend. and Fert. Co., Buffalo, N. Y.	Found	2.75	6 88	7.93	7 93	1.72	....	9.65	1.86	1 95	16 76	115
116	**Buffalo Fertilizer**..........	Claimed	2.25	5 62	8.00	....	1.00	....	9.00	1.50	....	....	
	The Milsom Rend. and Fert. Co., Buffalo, N. Y.	Found	2.25	....	7.87	7 87	1.59	....	9.46	1.41	1 48	14 97	116
117	**Potato, Hop, and Tobacco Fertilizer**..........	Claimed	2.50	....	8.00	....	1.00	....	9.00	4 00	....	....	
	The Milsom Rend. and Fert Co., Buffalo, N. Y.	Found	2.65	6 62	7.77	7 77	1.28	....	9.05	3 88	4 08	18 47	117
118	**Vegetable Bone Fertilizer**..........	Claimed	5.00	11 75	8.00	....	1.00	....	9.00	5.00	....	....	
	The Milsom Rend. and Fert. Co., Buffalo, N. Y.	Found	4.70	....	9.25	9 25	0.90	....	10.15	5.05	5 30	26 30	118
119	**High Farming**..........	Claimed	2.25	....	8.00	....	....	....	9.00	2 45	....	....	
	The Oakfield Fert. Co., Buffalo, N. Y..........	Found	2.50	6 25	7.86	7 86	1.15	....	9.01	2.33	2 45	16 56	119
120	**Domestic**..........	Claimed	2.00	....	8.00	....	....	....	9.00	1.08	....	....	
	The Oakfield Fert. Co., Buffalo N. Y..........	Found	2.40	6 00	7.36	7 36	1.21	....	8.57	1.27	1 33	14 69	120

121	Golden Sheaf........................	Claimed	1.50	....	7.00	....	....	....	8.00	1.90	....	....	
	The Oakfield Fert. Co., Buffalo, N. Y........	Found	1.65	$1 12	7.54	$7 54	.64	....	8.18	1.89	$1 99	$13 65	121
122	Great Value......................	Claimed	1.00	....	6.00	... .	....	....	7.00	1.08	....	....	
	The Oakfield Fert. Co , Buffalo, N. Y.........	Found	1.40	3 50	7.23	7 23	0.70	....	7.93	1.16	1 22	11 95	122
123	Prolific Crop Producer........... ....:............	Claimed	1.00	....	6.00	....	1.00	....	7.00	1.00	....	....	
	The Williams & Clark Fert. Co., New York	Found	1.33	3 32	8.17	8 17	1.98	....	10.15	1.39	1 46	12 95	123
124	Royal Bone Phosphate...............................	Claimed	1.40	....	7 00	....	1.00	....	8.00	2.00	....	....	
	The Williams & Clark Fert. Co., New York	Found	1.65	4 12	8.89	8 89	1.72	....	10.61	2.18	2 29	15 30	124
125	Good Grower Potato Phosphate..............	Claimed	1.50	....	6,00	....	1.00	....	7.00	5.00	....	....	
	The Williams & Clark Fert. Co., New York	Found	2.03	5 08	7.03	7 03	2.11	....	9.14	4.30	4 52	16 63	125
126	Crocker's New Rival Ammon. Superphos..... ..	Claimed	1.50	....	10.00	....	1.00	....	11.00	1.60	....	....	
	The Crocker Fert. & Chem.Co , Buffalo, N.Y	Found	1.55	3 88	10.03	10 03	1,28	....	11.31	1.77	1 86	15 77	126
127	Crocker's Universal Grain Grower	Claimed	1.00	....	7.00	....	1.00	....	8.00	2.70	....	....	
	The Crocker Fert. & Chem.Co , Buffalo, N.Y	Found	1.05	2 62	7.04	7 04	0.51	....	7.55	3.41	3 58	13 24	127
128	Crocker's General Crop Phosphate................	Claimed	1.00	....	7.00	....	1.00	....	8.00	1.08	....	....	
	The Crocker Fert. & Chem.Co , Buffalo,N Y	Found	1.23	3 08	7.35	7 35	1.02	....	8.37	1.25	1 31	11 74	128
129	Crocker's Practical Ammon. Superphos...........	Claimed	1.00	....	8.00	....	1.00	....	9.00	1.08	....	....	
	The Crocker Fert. & Chem.Co., Buffalo,N.Y	Found	1.25	3 12	8.25	8 25	1.53	....	9.78	1.31	1 37	12 74	129
130	Seeding Down Fertilizer.............................	Claimed	2.00	....	10.00	....	1.00	....	11.00	2.50	....	....	
	The Ohio Fermers' Fert. Co , Columbus, O.	Found	2.00	5 00	10.23	10 23	1.72	....	11 95	2.37	2 49	17 72	130
131	Ohio Wheat Maker.........................	Claimed	....	....	12.00	....	1.00	....	13.00	2.50	....	....	
	The Ohio Farmers' Fert Co., Columbus, O.	Found	....	....	11.89	11 89	2.11	....	14.00	2.03	2 13	14 02	131
132	Corn, Oats and Wheat Fish Guano.........	Claimed	1.50	....	9.00	....	1.00	....	10.00	2.00	....	....	
	The Ohio Farmers' Fert. Co., Columbus, O.	Found	1.58	3 95	9.15	9 15	2.62	....	11.77	2.12	2 22	15 32	132
133	Soluble Bone and Potash..	Claimed	....	....	12.00	....	1.00	....	13.00	1.00	....	....	
	The Ohio Farmers, Fert. Co., Columbus O.	Found	....	....	11.44	11 44	0.83	....	12.27	1.06	1 11	12 55	133

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
134	**Potato and Truck Fertilizer**	Claimed	3.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Ohio Farmers' Fert. Co., Columbus, O.	Found	3.00	$7 50	8.44	$8 44	2.36	....	10.80	3.84	$4 03	$19 97	134
135	**Powter Brand**	Claimed	1.50	....	8.00	....	....	....	....	1.50	....	....	
	The American Reduction Co., Pittsburg, Pa.	Found	2.23	5 82	4.79	4 79	3.84	....	8.63	1.83	1 92	12 53	135
136	**Champion Fertilizer**	Claimed	3.50	....	10.00	....	....	....	12.00	....	....	....	
	The Newburgh Fert. Co., Cleveland, O.	Found	3.85	9 62	10.68	10 68	1.46	....	12.14	....	....	20 30	136
137	**Acidulated Bone**	Claimed	1.00	....	10.00	....	1.00	....	11.00	....	....	....	
	The North Western Fert. Co., Chicago, Ill.	Found	1.38	3 45	11.58	11 58	2.68	....	14.26	....	....	15 03	137
138	**German Truck and Potato Manure**	Claimed	3.00	....	10.00	....	2.00	....	12.00	4.00	....	....	
	The Walton Fert. Co., Warren, O.	Found	3.48	8 70	8.51	8 51	2.87	....	11.38	6.57	6 89	24 10	138
139	**Bone and Meat**	Claimed	4.50	....	....	....	....	....	13.00	....	....	....	
	Walker, Stratman & Co., Pittsburg, Pa.	Found	4.45	11 12	8.26	8 26	†8.88	$5 33	17.14	....	....	24 71	139
140	**Potato Phosphate**	Claimed	1.50	....	6.00	....	1.00	....	7.00	5.00	....	....	
	The Pacific Guano Co., New York, N. Y.	Found	0.93	2 32	8.25	8 25	3.13	....	11.38	3.47	3 65	14 22	140
141	**V. C. C. Co.'s Slaughter House Bone**	Claimed	2.00	....	8.00	....	1.00	....	9.00	2.00	....	....	
	The Vir.-Carr. Chem. Co., Richmond, Va.	Found	2.45	6 12	8.96	8 96	1.59	....	10.55	2.28	2 40	17 48	141

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† In animal matter.

142	**Genuine German Kainit**	Claimed								11.50			
	The Vir-Car. Chem. Co., Richmond, Va	Found								13.22	$13 88	$13 88	142
143	**Garden City Super Phosphate**	Claimed	2.50		8.00		4.00		12.00	0.54			
	The North Western Fert. Co., Chicago, Ill.	Found	3.35	$8 38	7.91	$7 91	4.10		12.01	0.98	1 02	17 31	143
144	**Bone and Potash**	Claimed			10.00		1.00		11.00	1.25			
	The North Western Fert. Co., Chicago, Ill.	Found			10.86	10 86	1.85		12.71	*1.50	1 73	12 59	144
145	**Dissolved Bone Phosphate**	Claimed	1.50		11.00				12.00				
	The North Western Fert. Co., Chicago, Ill.	Found	1.86	4 50	12.02	12 02	3.33		15.35			16 52	145
146	**Potato Grower**	Claimed	3.00		8.00					2.00			
	The North Western Fert. Co., Chicago, Ill.	Found	4.10	10 25	7.80	7 80	†1.02	$0 61	8.82	*2.66	3 06	21 72	146
147	**Cumberland Guano**	Claimed	1 25		8.00		2.00		10.00	2.00			
	The Cumb'rl'd Bone Phos. Co., Boston, Mass	Found	1 30	3 25	8 38	8 38	1.98		10 36	2.16	2 26	13 89	147
148	**Seeding Down Fertilizer**	Claimed	1.00		7.00		2.00		9.00	1.00			
	The Cumb'rl'd Bone Phos Co., Boston, Mass	Found	1.35	3 38	8.26	8 26	1.46		9.72	1.29	1 35	12 99	148
151	**Wheat Special**	Claimed	0.50		12.00								
	The I. B. Thomas & Son Co., Philadel'a, Pa.	Found	0.80	2 00	11.83	11 83	2.94		11.77			13 83	151
153	**Bone, Blood and Potash**	Claimed	5.00		8.00		1.50		10.00	7.00			
	Armour Fert. Works, Chicago, Ill	Found	5.35	13 38	8.58	8 58	†3.25	1 95	11.83	*6.60	7 69	31 60	153
155	**Special Potato Phosphate**	Claimed	2.00						13.00	3.00			
	Herrick, Harris & Co., Cleveland, O.	Found	2.80	7 00	8.71	8 71	5.62		14.33	2.16	2 26	17 97	155
156	**Lindale Phosphate**	Claimed	2.00						12.00				
	Herrick, Harris & Co., Cleveland, O.	Found	2.85	7 12	10.56	10 56	3.64		14.20			17 68	156
157	**Pride of Ohio**	Claimed	2.00						12.00				
	Herrick, Harris & Co., Cleveland. O	Found	2.25	5 62	7.88	7 88	5.68		13.56			13 50	157
158	**Niagara Wheat and Corn Producer**	Claimed	1.50		8.00		1.00		9.00	2.16			
	Niagara Fert. Works, Buffalo, N. Y.	Found	1.90	4 75	8.64	8 64	3.00		11.64	2.37	2 49	15 88	158

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*As sulphate. †In animal matter.

TABLE I—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
159	Niagara Grain and Grass Grower	Claimed	1.00	....	7.00	....	1.00	....	8.00	1.08	....	....	
	Niagara Fert. Works, Buffalo, N. Y	Found	1.30	$3 25	7.85	$7 85	0.90	....	8.75	1 41	$1 48	$12 58	159
160	Potato, Tobacco and Hop Phosphate	Claimed	2.00	....	8.00	....	1.00	....	9.00	2.70	....	....	
	Niagara Fert. Works, Buffalo, N. Y	Found	2.10	5 25	9.72	9 72	2.23	....	11.95	2.62	2 75	17 72	160
161	Crocker's Potato, Hop and Tobacco Phosphate	Claimed	2 50	....	10.00	....	1.00	....	11.00	3.25	....	....	
	The Crocker Fert. & Chem.Co , Buffalo, N.Y	Found	2.45	6 12	10.54	10 54	0.77	....	11.31	3.35	3 51	20 17	161
162	Crocker's Erie Fertilizer	Claimed	....	....	11 00	....	2.00	....	12.00	....	....	....	
	The Crocker Fert. & Chem.Co., Buffalo, N. Y	Found	....	....	13.88	13 88	1.15	....	15.03	....	....	13 88	162
164	Crocker's Niagara Phosphate	Claimed	....	....	11.50	....	2.00	....	13.50	....	....	....	
	The Crocker Fert. & Chem.Co., Buffalo, N.Y	Found	....	....	11.77	11 77	1.40	....	13.17	....	....	11 77	164
167	Bone Tankage and Potash	Claimed	6.02	....	....	....	....	....	16.73	3.00	....	....	
	Swift & Company, Chicago, Ill	Found	5.90	14 75	9.53	9 53	†6.97	$4 18	16.50	2.72	2 86	31 32	167
168	Superphosphate	Claimed	2.50	....	....	....	....	....	17.50	2.00	....	....	
	Swift & Company, Chicago, Ill	Found	3.45	8 62	10.05	10 05	†7.48	4 49	17.53	1.97	2 07	25 23	168
169	Old Honesty	Claimed	1.60	....	10.00	....	3 00	....	13.00	....	....	....	
	The Royal Fertilizer Co., Cleveland, O	Found	1.65	4 12	10.03	10 03	4.10	....	14.13	....	....	14 15	169

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† In animal matter.

170	**Alliance Superphosphate**	Claimed	....	....	11.50	....	1.00	....	12.50	....	....	....	
	The Royal Fertilizer Co., Cleveland, O.	Found	....	....	14.14	$14 14	1.08	....	15.22	....	....	$14 14	170
173	**Special Potato**	Claimed	3.00	....	2.00	....	....	....	....	7.00	....	....	
	The American Reduction Co., Pittsburg, Pa	Found	2 80	$7 00	1.28	1 28	0 57	....	1.85	*6.65	$7 65	15 93	173
174	**Reliance Dissolved Bone**	Claimed	....	....	14.00	....	2.00	....	16 00	....	....	....	
	The Walton Fertilizer Co., Warren, O.	Found	....	....	13.82	13 82	1 59	....	15.41	....	....	13 88	174
176	**Packing House Fertilizer**	Claimed	8.20	....	8.32	....	5.94	....	14.26	....	....	....	
	The Cleveland Provision Co., Cleveland, O.	Found	8.05	20 12	8.58	8 58	†5.62	$3 37	14.20	....	....	32 07	176
177	**Western Reserve Fertilizer**	Claimed	2.50	....	8.00	....	....	....	10.00	2.00	....	....	
	The Newburgh Fertilizer Co., Cleveland, O.	Found	2.50	6 25	9.15	9 15	3.96	....	13.11	1.97	2 07	17 47	177
178	**Complete Manure "A" Brand**	Claimed	3.00	....	10.00	....	2.00	....	12.00	2.50	....	....	
	The Mapes F. & P. Guano Co., New York	Found	3.05	7 62	12.22	12 22	1.08	....	13.36	2.89	3 03	22 87	178
179	**Ammoniated Dissolved Bone with Potash**	Claimed	1.50	....	10.00	....	2.00	....	13.00	1.50	....	....	
	The Mapes F. & P. Guano Co., New York	Found	1.70	4 25	11.43	11 43	1.15	....	12.58	1.72	1 80	17 48	179
181	**Leader Guano**	Claimed	1.00	....	7.00	....	1.00	....	8.00	2.00	....	....	
	The Read Fertilizer Co., New York	Found	1.45	3 62	7.67	7 67	0.77	....	8.44	2.28	2 40	13 69	181
182	**Farmers' Friend**	Claimed	2.50	....	9.00	....	2.00	....	11.00	2.00	....	....	
	The Read Fertilizer Co., New York	Found	2.65	6 62	9 15	9 15	1.34	....	10.49	2.20	2 31	18 08	182
183	**Dissolved Bone**	Claimed	....	....	12.00	....	2.00	....	14.00	....	....	....	
	The Read Fertilizer Co., New York	Found	....	....	12.08	12 08	2.43	....	14.51	....	....	12 08	183
184	**Ammoniated Dissolved Bone Phos**	Claimed	2.20	....	9 00	....	2.00	....	11.00	1.50	....	....	
	Lister's Ag. Chem. Works, Newark, N. J.	Found	2.55	6 38	11.24	11 24	1.34	....	12.58	*1 83	2 10	19 72	184
185	**Animal Bone and Potash No. 2**	Claimed	....	....	10.00	....	1.00	....	11.00	3.00	....	....	
	Lister's Ag. Chem. Works, Newark, N. J.	Found	....	....	10.93	10 93	0.96	....	11.89	3.03	3 18	14 11	185
187	**Acidulated Bone and Potash**	Claimed	1.00	....	10.00	....	1.00	....	11.00	1.50	....	....	
	The North Western Fert. Co., Chicago, Ill.	Found	1.20	3 00	11.57	11 57	2.94	....	14.51	*1.54	1 77	16 34	187

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*As sulphate. †In animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
188	Potato and Vegetable Fertilizer........................	Claimed	4.00	....	8 00	....	....	....	10.00	4.00	....	....	
	The Cleveland Dryer Co., Cleveland, O......	Found	3.35	$8 38	7.93	$7 93	4.99	....	12.92	4.10	$4 30	$20 61	188
189	Ammoniated Dissolved Bone..........................	Claimed	1.50	....	10.00	....	....	....	15 00	....	....	....	
	The Cleveland Dryer Co., Cleveland, O.....	Found	1.65	4 12	10.80	10 80	3.33	....	14.13	....	....	14 92	189
190	Lawrence Wheat Special...............................	Claimed	2.50	....	10.00	....	1.00	....	11 00	1.50	....	....	
	The Royal Fert. Co., Cleveland, O............	Found	2.65	6 62	9.22	9 22	4.53	....	13.75	1.66	1 74	17 58	190
191	Potato, Vegetable and Tobacco........................	Claimed	4 00	....	9.00	....	3.00	....	12.00	4.00	....	....	
	The Royal Fert. Co., Cleveland, O............	Found	4.00	10 00	7.33	7 33	5.25	....	12.58	6.18	6 49	23 82	191
192	P. A. P. Phosphate.........	Claimed	1.00	....	10.00	....	....	....	11.50	1.25	....	....	
	The Royal Fert. Co.. Cleveland, O............	Found	1.40	3 50	7.91	7 91	4.16	....	12.07	2.39	2 51	13 92	192
193	Powter's General Phosphate..........................	Claimed	2 00	....	8.00	....	....	....	....	2.00	....	....	
	The American Reduction Co., Pittsburg, Pa	Found	2.10	5 25	7.73	7 73	1.92	....	9.65	*1.70	1 96	14 94	193
194	Ammoniated Dissolved Bone	Claimed	1.50	....	8.00	....	....	....	10.00	1.00	....	....	
	The Bowker Fert, Co., Boston, Mass........	Found	1.75	4 38	9.51	9 51	2.56	....	12.07	1.39	1 46	15 35	194
195	Standard	Claimed	3.00	....	10.00	....	....	....	11.00	1.62	....	....	
	The Oakfield Fert. Co., Buffalo, N. Y........	Found	3.25	8 12	10.24	10 24	1.46	....	11 70	1.85	1 94	20 30	195

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*As sulphate. †In animal matter.

196	**Potato and Tobacco**........ The Oakfield Fert. Co., Buffalo, N. Y.......	Claimed	3.00	....	6.00	....	....	....	7.00	4.32	....	....	
		Found	3.80	$9 50	6.01	$ 6 01	0.96	....	6.97	4.14	$4 34	$19 85	196
197	**Baltimore Special**........ The Baltimore Guano Co., Baltimore, Md.	Claimed	1.00	....	9.00	....	2.00	....	11.00	2.00	....	....	
		Found	1.15	2 88	9.01	9 01	1.08	....	10.09	2.24	2 35	14 24	197
198	**Farmers' Dissolved Bone**........ The Baltimore Guano Co., Baltimore, Md.	Claimed	....	....	14 00	....	2.00	....	15.00	....	....	....	
		Found	....	....	14.90	14 90	0.83	....	15.73	....	....	14 90	198
199	**Entire Bone Phosphate**........ The W. U. Chemical Co., Cleveland, O......	Claimed	1.25	....	9.00	....	3.00	....	13.00	....	....	....	
		Found	1.75	4 38	10.68	10 68	3.77	....	14.45	....	....	15 06	199
202	**Acid Phosphate**........ S. M. Hess & Bro., Philadelphia, Pa.........	Claimed	....	....	14.00	....	2.00	....	16.00	....	....	....	
		Found	....	....	15 93	15 93	0.44	....	16.37	....	....	15 93	202
203	**Dissolved Bone and Potash**........ The Milsom Rend. and Fert. Co., Buffalo, N Y.	Claimed	....	....	9.00	....	2.00	....	11.00	1.65	....	....	
		Found	....	....	9.66	9 66	0.83	....	10.49	2.10	2 20	11 86	203
204	**Corn and Potato Fertilizer**........ The Pittsburg Provision Co., Pittsburg, Pa	Claimed	2.00	....	9.00	....	2.00	....	11.00	3.00	....	....	
		Found	2.25	5 62	7.87	7 87	3.00	....	10.87	2.97	3 12	16 61	204
205	**Big Bonanza**........ Walker, Stratman & Co., Pittsburg, Pa.....	Claimed	2.00	....	11.00	....	4.00	....	15.00	2.00	....	....	
		Found	2.40	6 00	9.19	9 19	3.46	....	12.65	2.37	2 49	17 68	205
206	**Smoky City**........ Walker, Stratman & Co., Pittsburg, Pa.....	Claimed	1.50	....	12.00	....	3.00	....	15.00	1.00	....	....	
		Found	2.55	6 38	10.60	10 60	2.11	....	12.71	1.25	1 31	18 29	206
207	**Four Fold**........ Walker, Stratman & Co., Pittsburg, Pa.....	Claimed	1.00	....	8.00	....	3 00	....	11.00	1.00	....	....	
		Found	1.95	4 88	8.12	8 12	2.94	....	11.06	1.50	1 58	14 58	207
210	**Valley Phosphate**........ J. L. & H. Stadler, Cleveland, O........	Claimed	4.00	....	6.00	....	2.00	....	9.00	1.50	....	....	
		Found	3.35	8 38	7.34	7 34	0.77	....	8.11	2.01	2 11	17 83	210
211	**Live and Let Live Phosphate**........ J. L. & H. Stadler, Cleveland, O........	Claimed	3.00	....	6.00	....	2.00	....	9.00	....	....	....	
		Found	3.05	7 62	7.22	7 22	0.83	....	8.05	....	....	14 84	211
212	**Wampler's Grain Grower**........ V. E. Wampler, Dayton, O........	Claimed	....	....	10.00	....	2.00	....	12.00	....	....	....	
		Found	....	....	11.32	11 32	3.13	....	14.45	....	....	11 32	212

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*As sulphate. †In animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
213	**Austinburg Special**	Claimed	2.50		8.00		1.00		9.00	0.54			
	The Crocker Fert. & Chem. Co ,Buffalo, N.Y.	Found	2.45	$6 12	9 71	$9 71	2.87		12.58	0.79	$0 83	$16 66	213
214	**Homestead Tobacco Grower**	Claimed	3 50		10.00		0.50			3.50			
	Michigan Carbon Works, Detroit, Mich.	Found	4.25	10 62	10.29	10 29	0.32		10 61	5.15	5 41	26 32	214
215	**Jarves Tobacco Fertilizer**	Claimed	2.00		6.00		1.50			2.00			
	Michigan Carbon Works, Detroit, Mich.	Found	2.60	6 50	8.05	8 05	0.77		8.82	1 39	1 46	16 01	215
217	**Diss. Raw Bone and Potash**	Claimed	3.00						13.00	5.00			
	The Canton Fert. Co., Canton, O.	Found	4.05	10 12	8.38	8 38	†6.01	$3 61	14.39	*5.41	6 22	28 33	217
218	**Soluble Bone and Potash**	Claimed	3.00						11.00	3 00			
	The Canton Fert. Co., Canton, O.	Found	5 55	13 88	7 39	7 39	†2.68	1 61	10.07	*4.91	5 65	28 53	218
219	**Bone and Meat**	Claimed	2.00						10.00	3.00			
	The Canton Fert. Co., Canton, O.	Found	5.80	14 50	6.59	6 59	†4.28	2 57	10.87	*4.72	5 43	29 09	219
220	**Peerless Bone Phos.**	Claimed	1 00						8.00	2 00			
	The Canton Fert. Co., Canton, O.	Found	3.70	9 25	6.14	6 14	†4 73	2 84	10.87	2.99	3 14	21 37	220
221	**General Crop Phosphate**	Claimed			10.00		2.00		12.00				
	The South Eastern Fert. Co., Cleveland, O.	Found			14.01	14 01	1.21		15.22			14 01	221

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*As sulphate. †In animal matter.

222	**Am. Bone Superphos**	Claimed	2.00	....	8.00	....	2.00	....	10.00	2.00	....	....	
	S. M. Hess & Bro, Philadelphia, Pa.	Found	2.30	$5 75	10.17	$10 17	0.83	....	11.00	2.18	$2 28	$18 20	222
223	**Emperor Phos**	Claimed	....	....	10.00	....	2.00	....	12.00	1.00	....	....	
	S. M. Hess & Bro., Philadelphia, Pa.	Found	....	....	10.62	10 62	1.08	....	11.70	1.16	1 22	11 81	223
225	**Corn Grower Phos**	Claimed	2.00	....	....	....	....	....	12.00	1.50	....	....	
	Herrick, Harris & Co., Cleveland. O	Found	2.05	5 12	7.91	7 91	4.16	....	12.70	2.33	2 45	15 48	225
227	**J. I Biltz Wheat, Oats and Barley Fert**	Claimed	1.50	....	9.00	....	1.00	....	10.00	2.00	....	....	
	The Crocker Fert. & Chem. Co, Buffalo, N.Y.	Found	2.30	5 75	9.21	9 21	2.62	....	11.83	2.53	2 65	17 61	227
228	**Normal Bone Phos**	Claimed	1.25	....	8.50	....	2.00	....	....	1.50	....	....	
	The I. P. Thomas & Son Co., Philadel'a, Pa.	Found	2.15	5 38	9.27	9 27	1.53	....	10.80	2.87	3 01	17 66	228
229	**Guano**	Claimed	1 25	....	8.00	....	2.00	....	10.00	2 00	....	....	
	The Standard Fert. Co., Boston, Mass.	Found	1.05	2 62	8 90	8 90	2.74	....	11.64	3.34	3 50	15 02	229
232	**Acorn Acid Phos**	Claimed	....	....	13.00	....	1.00	....	14.00	....	....	....	
	The Williams & Clark Fert. Co., New York	Found	....	....	15.66	15 66	0.77	....	16.43	....	....	15 66	232
233	**Plain Superphos**	Claimed	....	....	10.00	....	2.00	....	13.00	....	....	....	
	The Williams & Clark Fert. Co., New York	Found	....	....	12.15	12 15	0.77	....	12.92	....	....	12 15	233
234	**Corn and Wheat Grower (Anchor Brand)**	Claimed	3.50	....	....	....	....	....	13.00	1.50	....	....	
	The A. B. Mayer Mfg. Co., St. Louis, Mo.	Found	3.70	9 25	8.06	8 06	†5.81	$3 49	13.87	*1.99	2 29	23 09	234
235	**Complete Fertilizer (Anchor Brand)**	Claimed	2.50	....	....	....	....	....	10.00	1.50	....	....	
	The A. B. Mayer Mfg. Co., St. Louis, Mo.	Found	3.10	7 75	5.37	5 37	4.28	....	9.65	*2.28	2 62	15 74	235
236	**White Burley Tobacco Fert**	Claimed	3 00	....	9.00	....	....	....	11.00	2.00	....	....	
	The Cleveland Dryer Co., Cleveland, O	Found	2.10	5 25	9.71	9 71	2.56	....	12.27	2.14	2 24	17 20	236
237	**Sure Growth Superphos**	Claimed	1.50	....	8.00	....	2.00	....	10.00	1.50	....	....	
	Thompson & Edwards Fert. Co., Chicago, Ill.	Found	2.10	5 25	5.37	5 37	6.40	....	11.77	0.41	0 43	11 05	237
238	**Packing House Fert**	Claimed	2.00	....	....	....	....	....	8.00	2.00	....	....	
	Thompson & Edwards Fert. Co., Chicago, Ill.	Found	2.35	5 88	4.35	4 35	6.14	....	10.49	1.06	1 11	11 34	238

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*As sulphate. †In animal matter

TABLE I—PHOSPHATES AND SUPERPHOSPHATES—Continued

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					* Potash.		Total value.	Record number.
					Available.		Insoluble.						
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
239	**Onion Fertilizer**	Claimed	2.00	....	8.00	....	1.00	....	9.00	6.00	....	....	
	Armour Fert. Works, Chicago, Ill	Found	4.15	$10 38	9.59	$9 59	4.22	....	13.81	6 78	$7 12	$27 09	239
240	**Corn and Wheat Grower**	Claimed	4.00	....	10.00	....	2.00	....	12.00	4.00	....	....	
	The J. & F. Schroth Fert. Co, Cin., O	Found	5.35	13 38	7.24	7 24	†5.81	$3 49	13.05	6.74	7 08	31 19	240
241	**Queen City Phosphate**	Claimed	3.00	....	8.25	....	3.25	....	11.50	2.00	....	....	
	The J. & F. Schroth Fert. Co., Cin., O	Found	3.20	8 00	6.99	6 99	†6.34	3 80	13.33	2.47	2 59	21 38	241
242	**Schroth's Special**	Claimed	2.00	....	7.00	....	3.00	....	10.00	1.00	....	....	
	The J. & F. Schroth Fert. Co, Cin., O	Found	3.95	9 88	6.59	6 59	†7.80	4 68	14.39	2.03	2 13	23 28	242
243	**Button Bone Fertilizer**	Claimed	3.00	....	10.00	....	2.00	....	12.00	3.00	....	....	
	E. P. Critchfield, Howard, O.	Found	3.15	7 88	9.85	9 85	1.98	....	11.83	3.55	3 73	21 46	243
244	**Critchfield's Standard Phosphate**	Claimed	....	....	14.00	....	2.00	....	16.00	....	....	....	
	E. P. Critchfield, Howard, O	Found	....	....	13.61	13 61	0.90	....	14.51	....	....	13 61	244
245	**Challenge Corn Grower**	Claimed	2.50	....	8.00	....	4.00	....	12.00	0.54	....	....	
	The Northwestern Fert. Co., Chicago, Ill.	Found	3.05	7 62	9.13	9 13	4.10	....	13.23	1.02	1 07	17 82	245
247	**Ohio Valley Phosphate**	Claimed	2.00	....	8.00	....	3 00	....	11.00	2.00	....	....	
	G. S. Barttlett, Suc. to Cin. Des. Co., Cin., O.	Found	2.45	6 12	10.11	10 11	4.66	....	14.77	2.80	2 94	19 17	247

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*As sulphate. † In animal matter.

249	Super Phosphate with Potash	Claimed	2.00						10.00	2.00			
	The Bucyrus Fert. Co., Bucyrus, O.	Found	1.80	$4 50	9.96	$9 96	2 11		12.07	2.22	$2 33	$16 70	249
250	Ohio Farmers' Phosphate	Claimed	2.00						12.00				
	The Bucyrus Fert. Co., Bucyrus, O.	Found	2 40	6 00	10.42	10 42	3.52		13.94			16 42	250
251	Buckeye Wheat Grower	Claimed	1.50						12.00	2.00			
	The Bucyrus Fert. Co., Bucyrus, O.	Found	0.90	2 25	9.65	9 65	5 25		14.90	2.33	2 45	14 35	251
252	Dissolved Bone	Claimed							14.00				
	The Bucyrus Fert. Co., Bucyrus, O.	Found			16.51	16 51	0.38		16.89			16 51	252
253	World of Good Raw Bone Superphos.	Claimed	2.00		8.00		2.00		10.00	2.00			
	The Thompson & Edwards Fert. Co., Chic.	Found	4.55	11 38	11.11	11 11	0.90		12.01	*4.18	4 81	27 30	253
255	Chicago Bone Meal	Claimed	2.50						18.00	3.00			
	The Thompson & Edwards Fert. Co., Chic.	Found	4.50	11 25	8.58		3.19		11.77	*9.95	11 44	22 69	255
256	Bone and Blood Animal Guano	Claimed	6.50						10.50				
	The Thompson & Edwards Fert. Co, Chic.	Found	8.85	22 12	5.75	5 75	†3.77	$2 26	9.52			30 13	256
257	Superior Phosphate	Claimed			14.00		1.00		15.00				
	The Ohio Farmers' Fert. Co., Columbus, O.	Found			13.95	13 95	1.46		15.41			13 95	257
260	Alkaline Bone	Claimed			10.00		1.00		11.00	2.00			
	The Detrick Fert. & Chem. Co., Balti'ore, Md.	Found			11 25	11 25	1.40		12.65	2.16	2 26	13 51	260
261	Detrick's Sol. Bone Phos.	Claimed			13 50		0.75		14.25				
	The Detrick Fert. & Chem. Co., Balti'ore, Md.	Found			14 59	14 59	1.53		16.12			14 59	261
262	XXtra Acid Phosphate	Claimed			14.00		1.00		15.00				
	Louis F. Detrick, Baltimore, Md.	Found			15.10	15 10	0.51		15.61			15 10	262
263	All Soluble	Claimed	3.50		8.00		1.50		10.00	4.00			
	Armour Fert. Works, Chicago, Ill.	Found	3.85	9 62	8.56	8 56	1.34		9.90	*5.84	6 72	24 90	263
264	Acid Phosphate	Claimed			12.00								
	Armour Fert. Works, Chicago, Ill.	Found			13.88	13 88	4.35		18.23			13 88	264

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*As sulphate. †As animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
265	Diamond Cereala Sol. Bone	Claimed	0.50	....	15.00	....	2.00	....	17.00	....	....	....	
	The Walton Fert. Co., Warren, O.	Found	0.40	$1 00	13.63	$13 63	0.57	....	14.20	....	....	$14 63	265
266	Special Diss. Bone Phos	Claimed	....	....	12 00	....	2.00	....	14.00	....	....	....	
	The Walton Fert. Co., Warren, O.	Found	....	....	10.99	10 99	1.15	....	12.14	....	....	10 99	266
267	Ammoniated Wheat and Corn Phos	Claimed	2.50	....	10.00	....	1.00	....	11.00	1.60	....	....	
	The Crocker Fert. and Chem. Co., Buffalo, N.Y.	Found	3.75	6 88	10.56	10 56	1.21	....	11.77	1.93	$2 03	19 47	267
268	Superior Alkaline Bone	Claimed	....	....	11.00	....	1.00	....	12.00	1.35	....	....	
	The Crocker Fert. and Chem. Co., Buffalo, N.Y.	Found	....	....	11.77	11 77	1 15	....	12.92	1.29	2 41	14 18	268
269	U. S. Superphosphate	Claimed	1.60	....	7.00	....	1.00	....	8.00	2.00	....	....	
	Lister's Ag. Chem. Works, Newark, N. J.	Found	1.80	4 50	8.05	8 05	1.28	....	9.33	*2.01	2 31	14 86	269
270	Lister's Special Wheat Fert	Claimed	2.00	....	8.00	....	1.00	....	9.00	3.00	....	....	
	Lister's Ag. Chem. Works, Newark, N. J.	Found	2.25	5 62	10.03	10 03	2.49	....	12 52	2.91	3 05	18 70	270
271	Improved Superphosphate	Claimed	1.60	....	10.00	....	2.00	....	....	1.00	....	....	
	The I.P. Thomas & Son Co., Philadelphia, Pa.	Found	1.25	3 12	11.83	11 83	1.40	....	13.23	1.15	1 21	16 16	271
272	S. C. Phosphate	Claimed	....	....	13 00	....	2.00	....	....	....	....	....	
	The I.P. Thomas & Son Co., Philadelphia, Pa.	Found	....	....	17.27	17 27	0.64	....	17.91	....	....	17 27	272

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*As sulphate † As animal matter.

273	**Common Sense**	Claimed	2.50	....	....	....	....	....	3.50	1.00	....	....	
	The American Reduction Co., Pittsburg, Pa.	Found	2.60	$6 50	5.11	$5 11	0.70	....	5.81	0.87	$0 91	$12 52	273
274	**Number One**	Claimed	....	....	14.00	....	0.75	....	....	....	....	....	
	The Springfield Fert. Co. Springfield, O	Found	....	....	13.75	13 75	0.83	....	14.58	....	....	13 75	274
275	**Acid Phosphate**	Claimed	....	....	14.00	....	1.00	....	15.00	....	....	....	
	The Rasin Fert. Co., Baltimore, Md	Found	....	....	14.20	14 20	0.64	....	14.84	....	....	14 20	275
276	**Big Crop Bone Phosphate and Potash**	Claimed	....	....	10.00	....	2.00	....	12.00	3.00	....	....	
	Geo. W. Mace, Greenville, O	Found	....	....	10.47	10 47	2.05	....	12.52	2.94	3 08	13 55	276
277	**Ober's Dissolved Bone Phosphate**	Claimed	....	....	14.00	....	2.00	....	15.00	....	....	....	
	The G. Ober & Sons Co., Baltimore, Md	Found	....	....	15.92	15 92	0.13	....	16.05	....	....	15 92	277
278	**Zell's Dissolved S. C. Phosphate**	Claimed	....	....	12.00	....	2.00	....	14.00	....	....	....	
	The Zell Guano Co., Baltimore, Md	Found	....	....	13.75	13 75	1.40	....	15.15	....	....	13 75	278
279	**High Grade Electrical Dissolved Bone**	Claimed	....	....	14.00	....	2.00	....	16.00	....	....	....	
	M. E. Wheeler & Co., Rutland, Vt	Found	....	....	14.45	14 45	0.90	....	15.35	....	....	14 45	279
280	**International Grain and Grass Fertilizer**	Claimed	2.00	....	10.00	....	1.00	....	11.00	2.00	....	....	
	The International Seed Co, Rochester, N Y.	Found	2.20	5 50	10.87	10 87	3.07	....	13.94	2.24	2 35	18 72	280
281	**International Electric Guano**	Claimed	1.00	....	8.00	....	2.00	....	10.00	2.00	....	....	
	The International Seed Co., Rochester, N Y.	Found	1.50	3 75	8.51	8 51	1.85	....	10.36	2.14	2 24	14 50	281
284	**Tyler's High Grade Spec. Wheat and Grass Guano**	Claimed	1.00	....	8.00	....	1.00	....	9.00	2.00	....	....	
	W. D. Tyler, Wooster, O	Found	1.45	3 62	8.75	8 75	0.90	....	9.65	1.93	2.03	14 40	284
285	**Farmers' Alkaline Bone**	Claimed	....	....	8.00	....	1.00	....	9.00	1.08	....	....	
	W. D. Tyler, Wooster, O	Found	....	....	8.82	8 82	0.90	....	9.72	1.08	1 13	9 95	285
286	**Universal**	Claimed	1 00	....	8.00	....	1.00	....	9 00	5.00	....	....	
	The Packers' Union Fert. Co., New York	Found	1.30	3 25	8.75	8 75	1.28	....	10.03	4.49	4.71	16 71	286
287	**American Wheat Grower**	Claimed	1.00	....	8.00	....	1.00	....	9.00	2.00	....	....	
	The Packers' Union Fert. Co., New York	Found	1.45	3 62	8.89	8 89	1.66	....	10.55	2.45	2 57	15 08	287

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*As sulphate. †In animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
288	**Soluluble Dissolved Bone**	Claimed			13 00		1.00		14.00				
	The Quinnipiac Co., New York, N. Y	Found			15.93	$15 93	1.40		17.33			$15 93	288
291	**Animal Bone Phosphate**	Claimed	2.00						8 00	2.00			
	D. C. Leichty, Orrville, O	Found	3.00	$7 50	5.85	5 85	3.93		9.78	2.22	$2 33	15 68	291
292	**Powell's Dissolved Soluble Bone Phosphate**	Claimed			14.00		2.00		16 00				
	Powell Fert. & Chem. Co., Baltimore, Md.	Found			14.72	14 72	2.23		16.95			14 72	292
293	**Big Four Pure Bone Phosphate**	Claimed	5 00						12.00	2.00			
	Nelson Morris & Co., Chicago, Ill	Found	6.35	15 88	4.09	4 09	†5.56	$3 34	9.65	1.29	1 35	24 66	293
294	**Game Guano**	Claimed	2.50		9.00		2.00		11.00	2.50			
	The Baltimore Guano Co, Baltimore, Md.	Found	2.70	6 75	9.27	9 27	1.98		11.25	2.90	3 04	19 06	294
295	**Farmers' Alkaline Bone**	Claimed			10.00		2 00		11 00	2.00			
	The Baltimore Guano Co., Baltimore, Md.	Found			7.93	7 93	1.53		9.46	*3.43	3 94	11 87	295
296	**Dissolved Bone Phosphate**	Claimed			13.00		1.00		14.00				
	The Baltimore Guano Co., Baltimore, Md.	Found			14.01	14 01	1.40		15.41			14 01	296
298	**Button Bone**	Claimed	2.50		10.00		1.50		11.50				
	The Alliance Fert. Co., Alliance, O	Found	1.65	4 12	11.84	11 84	1.59		13.43	3.24	3 40	19 36	298

*As sulphate. †In animal matter.

299	**Soluble Bone and Potash**	Claimed	1.25	....	9.00	....	1.00	....	10.00	2.25	....	....	
	The Alliance Fertilizer Co., Alliance, O....	Found	1.00	$2 50	9.85	$9 85	1.92	....	11.77	3.22	$3 38	$15 73	299
300	**Bone Black Phosphate and Potash..**	Claimed	1.50	....	9.00	....	1.50	....	10.50	2.00	....	....	
	The Alliance Fertilizer Co., Alliance, O...	Found	2.05	5 12	9.41	9 41	1.59	....	11.00	3.74	3 92	18 45	300
301	**Bone and Phosphate Mixture**......................	Claimed	2.50	....	8.00	....	....	....	15.00	....	....	....	
	The Cleveland Dryer Co., Cleveland, O.....	Found	2.60	6 50	9.59	9 59	6.14	....	15.73	....	....	16 09	30
302	**Ammoniated Bone Superphosphate**	Claimed	3.50	....	10.00	....	1.00	....	11.00	1.08	....	....	
	The Crocker Fert., Chem. Co., Buffalo, N. Y	Found	3 95	9 88	10.49	10 49	1.21	....	11.70	1.64	1 72	22 09	302
303	**Indian Brand Gilead Phosphate**....................	Claimed	3.00	....	9.00	....	3 00	....	12.00	2.00	....	....	
	G. S. Bartlett, Suc. Cin. Des. Co., Cin. O...	Found	4.20	10 50	9.09	9 09	†4.02	$2 41	13.11	2.24	2 35	24 35	303
304	**No. 1 Syndicate—Sulphate of Potash**............	Claimed	....	....	....	....	....	....	....	45.00	....	....	
	James Bonday, Jr., & Co, Baltimore, Md..	Found	....	....	....	....	....	....	....	51.80	54 39	54 39	304
306	**Big Three Pure Bone Phosphate**....................	Claimed	3.00	....	....	....	....	....	10.00	1.00	....	....	
	Nelson Morris & Co., Chicago, Ill...........	Found	4.25	10 62	7.29	7 29	†2.94	1 76	10.23	0.25	0 26	19 93	306
307	**No. 1. Bone Phosphate**	Claimed	2.50	....	8.50	....	....	....	8.50	2.00	....	....	
	Sharpless & Carpenter, Philadelphia, Pa..	Found	2.65	6 62	9.33	9 33	2.05	....	11.38	2.35	2 47	18 42	307
308	**No. 2. For Grain and Grass**........................	Claimed	0.50	....	10.00	....	....	....	10.00	1.00	....	....	
	Sharpless & Carpenter, Philadelphia, Pa..	Found	0.60	1 50	10.99	10 99	1.59	....	12.58	0.93	0 97	13 46	308
309	**Soluble Bone and Potash**	Claimed	....	....	10.00	....	....	....	10.00	2 00	....	....	
	Sharpless & Carpenter, Philadelphia, Pa..	Found	....	....	9.46	9 46	5.05	....	14.51	1.70	1 78	11 24	309
310	**Acid Phosphate**..	Claimed	....	....	14.00	....	....	....	14.00	....	....	....	
	Sharpless & Carpenter, Philadelphia, Pa..	Found	....	....	13.17	13 17	1.34	....	14.51	....	....	13 17	310
312	**Victor Phosphate**......................................	Claimed	1.00	....	6.00	....	....	....	7.00	1.00	....	....	
	The Newburg Fertilizer Co., Cleveland, O	Found	0.90	2 25	6.66	6 66	0.64	....	7.30	0.25	0 26	9 17	312
313	**Diamond Bone Black Phosphate and Potash**...	Claimed	....	....	13.00	....	2.00	....	15.00	3.00	....	....	
	The Walton Fertilizer Co., Warren, O......	Found	....	....	13.37	13 37	0.44	....	13.81	*2.38	2 74	16 11	313

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*As sulphate. †In animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
314	**Ontario Fish Guano with Potash**	Claimed	2.00		9.00		2.00		11.00	2.50			
	The Walton Fertilizer Co., Warren, O.	Found	2.00	$5 00	8.76	$8 76	3.19		11.95	3.35	$3 51	$17 27	314
315	**Bowker's Dissolved Bone Phosphate**	Claimed			11.00		2.00		13.00				
	The Bowker Fert. Co., Boston and N. Y.	Found			13.95	13 95	1.08		15.03			13 95	315
316	**Ohio Valley Bone Dust**	Claimed	3.32						21.87				
	Wheeling Butchers' Assn. Wheeling, W. Va	Found	3.80	9 50	9.53	9 53	†7.42	$4 45	16.95			23 48	316
317	**Help Mate**	Claimed			12.00		1.00		13.00				
	Walter, Stratman & Co., Pittsburg, Pa.	Found			11.96	11 96	0.83		12.79			11 96	317
318	**Ober's Special Ammoniated Dissolved Bone**	Claimed	1.50		8.00		2.75		10.75	2.00			
	The G. Ober & Sons Co., Baltimore, Md.	Found	1.90	4 75	11.11	11 11	0.90		12.01	*2.99	3 44	19 30	318
319	**Acid Phosphate**	Claimed			14.00								
	Herrick, Harris & Co., Cleveland, O.	Found			14.26	14 26	0.64		14.90			14 26	319
320	**High Grade Royal Wheat Grower**	Claimed	1.00		8.00		1.00		9.00	2.00			
	M. E. Wheeler & Co., Rutland, Vt.	Found	1.05	2 62	7.09	7 09	2.56		9.65	1.66	1 74	11 45	320
322	**Abattoir Bone Dust**	Claimed	2.00						14.00				
	The Bradley Fertilizer Co., Boston, Mass.	Found	2.25	5 62	8.95	8 95	7.30		16.25			14 57	322

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*As sulphate. †In animal matter.

323	$14.75 S. C. Rock........	Claimed	....	....	7.00	....	....	....	....	....	....	....	
	The Ohio Farmers' Fert. Co., Columbus, O..	Found	....	....	9.28	$9 28	2.36	....	11.64	....	....	$9 28	323
324	Big Four Phosphate........	Claimed	0.25	....	9.00	....	1.00	....	10.00	0.75	....	....	
	The Globe Fertilizer Co., Louisville, Ky.....	Found	1.25	$3 12	9.65	9 65	0.44	....	10.09	*0.73	$0 84	13 61	324
326	Zell's Dissolved Bone Phosphate and Potash...	Claimed	....	....	12.00	....	2.00	....	14.00	1.00	....	....	
	The Zell Guano Co., Baltimore, Md........	Found	....	....	14.00	14 00	0.90	....	14.90	0.62	0 65	14 65	326
330	Great Eastern English Wheat Grower........	Claimed	1.00	....	8.00	....	1.00	....	......	2.00	....	....	
	The Great Eastern Fert. Co., Rutland, Vt...	Found	1.35	3 38	8.44	8 44	1.40	....	9.84	2.62	2 75	14 57	330
332	Pioneer City Favorite........	Claimed	2.00	....	8.00	....	2 00	....	12.00	2.00	....	....	
	The Marietta Bone & Phos. Co., Marietta, O..	Found	1 80	4 50	7.09	7 09	1.79	....	8.88	2.31	2 43	14 02	332
333	Pioneer City Dissolved Bone........	Claimed	0.75	....	8.00	....	2.00	....	12.00	1.00	....	....	
	The Marietta Bone & Phos. Co., Marietta, O..	Found	1.95	4 88	7.61	7 61	1.98	....	9.59	1.83	1 92	14 41	333
334	Pioneer City Hustler Phosphate........	Claimed	....	....	8.00	....	....	....	8.00	....	....	....	
	The Marietta Bone & Phos. Co., Marietta, O..	Found	....	....	7.29	7 29	1.08	....	8.37	....	....	7 29	334
335	Baugh's Double Eagle Phosphate........	Claimed	2.50	....	8.00	....	2.50	....	10.50	0.50	....	....	
	The Baugh & Sons Co., Philadelphia, Pa.....	Found	3.05	7 62	9.14	9 14	3.13	....	12.27	0.91	0 95	17 71	335
336	Baugh's Acid Phosphate........	Claimed	....	....	14.00	....	1.00	....	15.00	....	....	....	
	The Baugh & Sons Co., Philadelphia, Pa.....	Found	....	....	15.29	15 29	1.72	....	17.01	....	....	15 29	336
337	Urbana Animal Tankage and Guano........	Claimed	1.00	....	8.00	....	1.00	....	10.00	1.00	....	....	
	The Loudenback Fertilizer Co., Urbana, O..	Found	0.80	2 00	10.03	10 03	1.92	....	11.95	0.89	0 93	12 96	337
338	Waring's Q. and L. Ammoniated Phosphate.....	Claimed	1.50	....	10.00	....	2.00	....	12.00	1.50	....	....	
	J. W. Hunter, Baltimore, Md........	Found	1.75	4 38	11.44	11 44	1.21	....	12.65	1.45	1 52	17 34	338
340	Dissolved Bone and Potash........	Claimed	....	....	10.00	....	1.00	....	12.00	2.00	....	....	
	The Williams & Clark Fert. Co., New York...	Found	....	....	11.44	11 44	1.02	....	12.46	1.68	1 76	13 20	340
341	Acme Bone........	Claimed	2.50	....	9.00	....	....	....	18.00	....	....	....	
	The Newburgh Fert. Co., Cleveland, O	Found	2.35	5 88	9.61	9 61	9.84	....	19.45	....	....	15 49	341

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*As sulphate. †In animal matter.

TABLE I—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
344	**Lazaretto Dissolved S. C. Bone**..................	Claimed	....	....	14.00	....	1.00	....	15.00	....	....	....	
	Lazaretto Guano Co., Baltimore, Md........	Found	....	....	15.22	$15 22	0.77	....	15.99	....	....	$15 22	344
346	**O. K. Fertilizer**	Claimed	0.50	....	6.00	....	1.00	....	7.00	0.50	....	....	
	The Jarecki Chemical Co., Sandusky, O...	Found	0.75	$1 88	9.47	9 47	1.53	....	11.00	*1.35	$1 55	12 90	346
347	**Swift's Special Pure Phosphate**........	Claimed	2.60	....	12.00	....	5.00	....	17.00	2.00	....	....	
	Swift & Company, Chicago, Ill...............	Found	2.50	6 50	14.20	14 20	0.77	....	14.97	*1.79	2 06	22 76	347
349	**Bone and Potash Mixture**............................	Claimed	....	....	10 00	....	2.50	....	12.50	2.25	....	....	
	Louis F. F. Detrick, Baltimore, Md.........	Found	....	....	10.56	10 56	2.87	....	13.43	2.03	2 13	12 69	349
350	**Sockless and Shoeless A. A. Phosphate**.........	Claimed	1.25	....	8.00	....	2.00	....	10.00	1.25	....	....	
	Louis F. Detrick, Baltimore, Md.............	Found	1.50	3 75	9.47	9 47	2.23	....	11.70	1.47	1 55	14 77	350
351	**Plain Superphosphate**......................	Claimed	....	....	10.00	....	2.00	....	12.00	....	....	....	
	The Quinnipiac Co., New York, N. Y......	Found	....	....	10.55	10 55	2.56	....	13.11	....	....	10 55	351
352	**Uncas Bone Meal**......................................	Claimed	2.00	....	....	....	....	....	14.00	....	....	....	
	The Quinnipiac Co., New York, N. Y......	Found	2.50	6 25	6.14	6 14	†12.85	$7 71	18.99	....	....	20 10	352
	Acidulated Bone..	Claimed	4.50	....	8.50	....	7.50	....	16.00	....	....	....	
353	The Jones Fertilizing Co., Cincinnati O...	Found	6.00	15 00	9.28	9 28	†6.33	3 80	15.61	....	....	28 08	353

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*As sulphate. †In animal matter.

354	**Ammoniated Bone Meal**........ The Jones Fertilizing Co., Cincinnati, O....	Claimed Found	5.50 5.00	.... $12 50	7.00 9.57	.... $9 57	11.00 †9.08	.... $5 45	18.00 18.65	....	....	.... $27 52	354
355	**Royal Phosphate**........ J. R. Hunter, Jackson, O	Claimed Found	2.00 2.80	.... 7 00	6.00 6.01	.... 6 01	2.50 †2.62	.... 1 57	8.50 8 63	1.50 *1.50	.... 1 73	.... 16 31	355
356	**Hunter's Diamond Bcne**........ J. R. Hunter, Jackson, O........	Claimed Found	....	....	14 00 13.56	.... 13 56	1.00 1.34	....	15.00 14.90	....	....	.... 13 56	356
357	**Try Me Bone Phosphate**........ Josiah Cope & Co., Lincoln University, Pa.	Claimed Found	2.00 2.65	.... 5 12	12.00 11.44	.... 11 44	1.00 0.96	....	13.00 12.40	3.00 3.18	.... 3 34	.... 19 90	357
358	**Soluble Bone and Potash**........ Josiah Cope & Co., Lincoln University, Pa.	Claimed Found	....	....	11.00 11.37	.... 11 37	2.00 0.90	....	14.00 12.27	2.00 1.97	.... 2 07	.... 13 44	358
359	**Acidulated Phosphate**........ Josiah Cope & Co., Lincoln University, Pa.	Claimed Found	....	....	14.00 16.37	.... 16 37	1.00 1.34	....	16.00 17.71	....	....	.... 16 37	359
360	**Ruby Phosphate**........ James McCallum & Co., Dayton,O	Claimed Found	1.00 0.65	.... 1 62	14.00 14.90	.... 14 90	1.00 1.15	....	.... 16.05	....	....	.... 16 52	360
361	**Dissolved Bone**........ The Rasin Fertilizer Co., Baltimore, Md ...	Claimed Found	2.00 2.85	.... 7 12	10.00 10.87	.... 10 87	2.00 2.62	....	12.00 13.49	....	....	.... 17 99	361
363	**Circle Brand, Ground Bone with Potash**........ The Bradley Fertilizer Co., Boston, Mass...	Claimed Found	2.25 3.00	.... 7 50	6.00 7.22	.... 7 22	4.00 †6.91	.... 4 15	10.00 14.13	2.00 2.45	.... 2 57	.... 21 44	363
364	**Bone and Blood**........ Armour Fertilizer Works, Chicago, Ill......	Claimed Found	7.00 9.00	.... 22 50	5.00 6.07	.... 6 07	4.50 †3.71	.... 2 23	10.00 9.78	....	....	.... 30 80	364
366	**V. C. C. Co.'s Double Bone Phosphate**........ Virginia-Carolina Chem. Co.,Richmond,Va.	Claimed Found	....	....	14.00 13.69	.... 13 69	1.00 2.49	....	15.00 16.18	....	....	.... 13 69	366
368	**Crown Phosphate and Potash**........ John S. Reese & Co., Baltimore, Md........	Claimed Found	....	....	12.00 13.37	.... 13 37	2.00 0.70	....	14.00 14.07	2.00 2.12	.... 2 22	.... 15 59	368
369	**Reese's Elm Phosphate**........ John S. Reese & Co., Baltimore, Md........	Claimed Found	....	....	14.00 15.66	.... 15 66	2.00 0.77	....	16.00 16.43	....	....	.... 15 66	369

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*As sulphate. †In animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.						
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
370	Prairie Phosphate	Claimed	2.00		6.00		3.00		9.00				
	The North Western Fert. Co., Chicago, Ill.	Found	3.25	$8 12	8.06	$8 06	†4.92	$2 96	12.98			$19 14	370
371	Quick Acting Phosphate	Claimed			13.00		2.00		15 00				
	The North Western Fert. Co., Chicago, Ill.	Found			13.82	13 82	2.30		16.12			13 82	371
372	Dissolved Bone with Potash	Claimed			12.00		1.00		13 00	1.00			
	M. Hamm & Co., Chillicothe, O.	Found			15.03	15 03	1.53		16.56	*1.45	$1 67	16 70	372
374	Economy	Claimed			9.00		1.00		10.00				
	M. Hamm & Co., Chillicothe, O.	Found			11.45	11 45	3.96		15.41			11 45	374
376	Dissolved Bone Phosphate and Potash	Claimed			13.00		1.00		14.00	1.00			
	Geo. W. Mace, Greenville, O.	Found			12.47	12 47	1.92		14.39	1.33	1 39	13 86	376
377	The Nitid Plant Food	Claimed	12.50		13.50					15.00			
	W. F. Morrow, Hartwell, O	Found			16.31	16 31	0.38		16.69	11.78	12 37	28 68	377
378	Soluble Bone Phosphate	Claimed			14.00		1.00		15.00				
	The Susquehanna Fert. Co., Baltimore, Md.	Found			15.79	15 79	1.28		17.07			15 79	378
379	S. C. and C. Guano	Claimed			4.00				13.50	2.00			
	Griffith & Boyd, Baltimore, Md.	Found			6.14	6 14	4.60		10.74	2.93	3 07	9 21	379

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*As sulphate. †In animal matter.

380	**Urbana Sweepstakes Bone** The Loudenback Fertilizer Co., Urbana, O.	Claimed Found	2.00 1.00	.... $2 50	8.00 8.94	.... $8 94	1.00 0.96	....	10.00 9.90	2.00 1.41	.... $1 48	.... $12 92	380
381	**General 2-8-2** L. Frank & Sons, Zanesville, O.	Claimed Found	2.00 2.05	.... 5 12	8 00 10.69	.... 10 69	2.00 †4.53	.... $2 72	10.00 15.22	2.00 *2.72	.... 3 13	.... 21 66	381
382	**Bone Tankage and Potash 6 Per Cent** Swift & Company, Chicago, Ill	Claimed Found	6.00 5.65	.... 14 12	.... 9.47	.... 9 47	.... †5.94	.... 3 56	17.00 15.41	6.00 4.85	.... 5 10	.... 32 25	382
384	**Superphosphate and Potash 9 Per Cent** Swift & Company, Chicago, Ill	Claimed Found	2.00 2.70	.... 6 75	5.00 8.70	.... 8 70	10.00 †5 88	.... 3 53	15.00 14.58	9.00 *7.90	.... 9 09	.... 28 07	384
386	**Globe Wheat Grower** The Globe Fertilizer Co., Louisville, Ky	Claimed Found	2.00 2.65	.... 6 62	8.00 11.06	.... 11 06	.... 1.34	....	10.00 12.40	2.00 *2.58	.... 2 97	.... 20 65	386
387	**Bowker's Square Brand Bone and Potash** The Bowker Fertilizer Co., Boston, Mass	Claimed Found	2.00 2.20	.... 5 50	6.00 6.33	.... 6 33	.... 6.97	....	12.00 13.30	2.00 2.06	.... 2 16	.... 13 99	387
388	**Canada Unleached Hardwood Ashes** The Bowker Fertilizer Co., Boston, Mass	Claimed Found	....	....	.... 0.63	.... 0 63	1.00 1.90	....	1.00 1.53	3.00 *3.64	.... 4 19	.... 4 82	388
389	**Currie's Wheat Grower** The Currie Fertilizer Co., Louisville, Ky	Claimed Found	0.75 0.85	.... 2 12	11.50 12.28	.... 12 28	1.00 1.02	....	12.50 13.30	2.00 *2.12	.... 2 44	.... 16 84	389
391	**Hercules** George Wagner, Sandusky, O.	Claimed Found	6.85 2.55	.... 6 38	2.62 0.95	.... 0 95	0.32 0.13	....	.... 1.08	3.14 *2.82	.... 3 24	.... 10 57	391
392	**Maumee Valley Fertilizer** N. Rassel & Co., Toledo, O.	Claimed Found	6.40 6.10	.... 15 25	8.05 7.34	.... 7 34	4 02 †4.73	.... 2 84	12.07 12.07	0.54 0.48	.... 0 50	.... 25 93	392
394	**High Grade Superphosphate of Bone** D. Blotcher & Co., Gettysburg, Pa	Claimed Found	1.50 1.35	.... 3 38	10.50 10.43	.... 10 43	2.00 2.74	....	12.50 13.17	1.40 1.60	.... 1 68	.... 15 49	394
395	**Pleasant Valley** L. Morris, Sabina, O.	Claimed Found	5.00 2.35	.... 5 88	10.00 3.97	.... 3 97	3.00 †1.59	.... 0 95	13.00 5 56	0.16 0.21	.... 0 22	.... 11 02	395
396	**Defiance Fertilizer** John Ruehle, Defiance, O.	Claimed Found	2.00 2.10	.... 5 25	6.00 4.99	.... 4 99	3.00 †8.31	.... 4 99	9.00 13.30	2.00 0.58	.... 0 61	.... 15 84	396

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*As sulphate. †In animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
397	**Banner Dissolved Bone**	Claimed	....	....	30.00	....	....	....	32.00	....	....	....	
	Michigan Carbon Works, Detroit, Mich.	Found	....	....	30.25	$30 25	1.59	....	31.84	....	....	$30 25	397
398	**Acid Phosphate**	Claimed	....	....	13.00	....	....	....	14.00	....	....	....	
	Michigan Carbon Works, Detroit, Mich.	Found	....	....	13.05	13 05	1.40	....	14.45	....	....	13 05	398
399	**Red Line Am. Phosphate**	Claimed	2.00	....	8.00	....	....	....	9.00	....	....	....	
	Michigan Carbon Works, Detroit, Mich.	Found	2.20	$5 50	8.92	8 92	2.05	....	10.97	....	....	14 42	399
400	**Red Line Phosphate with Potash**	Claimed	....	....	10.00	....	....	....	12.00	3.00	....	....	
	Michigan Carbon Works, Detroit, Mich.	Found	....	....	10.51	10 51	1.59	....	12.10	3.38	$3 59	14 10	400
401	**Red Line Complete Manure**	Claimed	1.25	....	8.00	....	....	....	9.00	1.50	....	....	
	Michigan Carbon Works, Detroit. Mich.	Found	1.40	3 50	9.51	9 51	1.45	....	10.96	2.16	2 27	15 28	401
402	**Bone Black Crop Multiplier**	Claimed	2.00	....	8.00	....	2.00	....	....	1.00	....	....	
	B. T. Stanley, Agt., Berlin Center, O.	Found	2.55	6 38	9.07	9 07	0.90	....	9.97	1.83	1 92	17 37	402
404	**Acid Phosphate**	Claimed	....	....	13.00	....	1.00	....	14.00	....	....	....	
	The Pittsburg Provision Co., Pittsburg, Pa.	Found	....	....	13.56	13 56	1.34	....	14.34	....	....	13 56	404
405	**Wheat and Grass Grower**	Claimed	1.00	....	10.00	....	2.00	....	12.00	1.00	....	....	
	The Walton Fert. Co., Warren, O.	Found	0.80	2 00	7.80	7 80	1.08	....	8.88	1.00	1 05	10 85	405

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*As sulphate. †In animal matter.

406	**Daisy.**	Claimed	4.00		3.00		5.00		8.19	2.13			
	R. K. Giffen & Co., Wheeling, W. Va.	Found	7.50	$18 75	6.08	$6 08	†4.47	$2 68	10.55	0.56	$0 58	$28 09	406
408	**Farmers' Standard Am. Phosphate**	Claimed	2.00		8.00		2.75		10.75	1.50			
	The G. Ober & Sons Co., Baltimore, Md.	Found	2.75	6 88	9.20	9 20	3.00		12.20	1.90	2 00	18 08	408
410	**Farmers' Bone Phosphate.**	Claimed	1.25		10.00					1.00			
	The South Eastern Fert. Co., Cleveland, O.	Found	1.40	3 50	9.98	9 98	1.85		11.83	1.56	1 64	15 12	410
411	**Capital City Grain and Grass Grower**	Claimed	1.00		10.00		1.00		11.00	1.00			
	The Columbus Phosphate Co., Columbus, O.	Found	1.70	4 25	14.26	14 26	0.77		15.03	*1.75	2 01	20 52	411
412	**Capital City Wheat Grower**	Claimed			14.00		1.00		15.00				
	The Columbus Phosphate Co., Columbus, O.	Found			14.58	14 58	0.96		15.54			14 58	412
413	**Capital City Dissolved Bone and Potash**	Claimed			12.00		1.00		13.00	4 00			
	The Columbus Phosphate Co., Columbus, O.	Found			14.07	14 07	0.90		14.97	*3 97	4 57	18 64	413
414	**Special**	Claimed	2.00		11.00		3.00		14.00	1.00			
	McLean, Dahl & Co., Washington C.H., O.	Found	2.40	6 00	11.25	11 25	3.46		14.71	*1.54	1 77	19 02	414
415	**Fish and Potash Grain Special**	Claimed	1.50		9.00		1.00		10.00	4.00			
	The Jarecki Chemical Co., Sandusky, O.	Found	2.45	6 12	9.97	9 97	0.83		10.80	5.13	5 39	21 48	415
416	**T. & P. Superphosphate**	Claimed			14.00								
	E. A. Clendenin & Bro., Colora, Md.	Found			14.08	14 08	1.40		15.48			14 08	416
417	**Natural Plant Food**	Claimed					21.60						
	G. P. Jarvis, Agt., Nat. Pt. Food Co., Wash. D.C.	Found			1.28	1 28	17.07		18.35			1 28	417
418	**Half Pure Raw Bone and Half Pure Bone Phos.**	Claimed	3.00		10.00		12.00		22.00				
	E. Rauh & Sons, Indianapolis, Ind.	Found	2.30	5 75	11.72	11 72	10.29		22.01			17 47	418
420	**Bone and Phosphate Mixture**	Claimed	2.50		15.00		1.00		16.00	0.50			
	The Jarecki Chemical Co., Sandusky, O.	Found	2.05	5 12	10.17	10 17	†5.44	3 26	15 61	*0.75	0 86	19 41	420
421	**Dissolved Bone**	Claimed			16,00		1.00		17.00				
	M. Hamm & Co., Chillicothe, O.	Found			18.08	18 08	1.46		19.54			18 08	421

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*As sulphate. †In animal matter.

TABLE I.—PHOSPHATES AND SUPERPHOSPHATES—Concluded.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash.		Total value.	Record number.
					Available.		Insoluble.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
422	**Scientific Potato Fertilizer**................	Claimed	3.50	....	7.00	....	2.00	....	9.00	6.00	....	....	
	The Scientific Fert. Co., Pittsburg, Pa........	Found	3.45	$8 62	6.85	$6 85	2.87	....	9.72	*6.05	$6 96	$22 43	422
423	**Scientific Economy Fertilizer**.......................	Claimed	2.50	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Scientific Fert. Co., Pittsburg, Pa........	Found	2.85	7 12	7.28	7 28	2.56	....	9.84	4.45	5 12	19 52	423
424	**Scientific Corn and Grain Fertilizer**...............	Claimed	2.00	....	7.00	....	1.00	....	8.00	2.00	....	....	
	The Scientific Fert. Co., Pittsburg, Pa........	Found	2.60	6 50	7.16	7 16	2.17	....	9.33	*2.53	2 91	16 57	424
425	**Bone and Meat**.......................	Claimed	4.00	.. ..	....	....	....	....	13.00	....	....	....	
	The Scientific Fert. Co., Pittsburg, Pa........	Found	4.35	10 88	8.19	8 19	5.50	....	13.69	....	....	19 07	425

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*As sulphate. †In animal matter.

TABULATED ANALYSES AND VALUATIONS OF COMMERCIAL FERTILIZERS FOR THE YEAR ENDING DECEMBER 31, 1897.

All analyses are made by Prof. N. W. Lord, Ohio State University, Columbus, Ohio, Official Chemist. The valuations are based on the average commercial value of the ingredients in Ohio, as sold this year, viz: Ammonia, twelve and one-half cents (12½c) per pound, or two dollars and fifty cents ($2.50) per unit; phosphoric acid, in "fine" bone, four cents (4c) per pound or eighty cents (80c) per unit, in "medium" bone, three cents (3c) per pound or sixty cents (60c), per unit.

TABLE II.—BONE AND UNTREATED ORGANIC MATTER.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash (when included).		Total value.	Record number.
					In fine bone.		In medium bone.						
			Per cent.	Value.	Per cent	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
3	Desiccated Bone	Claimed	1.50						25.00				
	Michigan Carbon Works, Detroit, Mich	Found	1.85	$4 62	21.48	$17 18	9.42	$5 65	30 90			$27 45	3
19	Banner Raw Bone Flour	Claimed	3.75						20.00				
	Michigan Carbon Works, Detroit, Mich	Found	5.25	13 12	10.56	8 45	12.15	7 29	22.71			28 86	19
43	Pure Ground Bone	Claimed	3.00						23.00				
	Darling & Co., Chicago, Ill	Found	3.55	8 88	20.81	16 65	2.84	1 70	23.65			27 23	43
55	Bowker's Market Bone	Claimed	2.00						20.00				
	The Bowker Fertilizer Co., Boston, Mass	Found	2.55	6 38	19.90	15 92	4.98	2 99	24.88			25 29	55
69	Ground Raw Bone	Claimed	4.00						21.00				
	Darling & Co., Chicago, Ill	Found	5.15	12 88	13.22	10 58	10.38	6 23	23.60			29 69	69
73	Pure Ground Bone	Claimed	4.00						20.00				
	Strecker Bros., Marietta, O	Found	5.20	13 00	13,38	10 70	7.53	4 52	20.91			28 22	73

TABLE II.—BONE AND UNTREATED ORGANIC MATTER—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash (when included).		Total value.	Record number.
					In fine bone.		In medium bone.						
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
82	**Bone Meal**....................................	Claimed	3.00	....	....	....	....	....	24.00	....	....	....	
	Armour Fertilizer Works, Chicago, Ill.......	Found	3.90	$9 75	19.78	$15 82	6.25	$3 75	26.03	....	....	$29 32	82
94	**Superior Bone Meal**	Claimed	4.00	....	....	....	....	....	22 00	....	....	....	
	The Cleveland Dryer Co., Cleveland, O.......	Found	4.00	10 00	12.47	9 98	8.31	4 99	20.78	....	....	24 97	94
105	**Pure Ground Bone**....................................	Claimed	4.00	....	....	....	....	....	20 00	....	....	....	
	The Jarecki Chemical Co., Sandusky, O.....	Found	5.05	12 62	14.50	11 60	3.85	2 31	18.35	....	....	26 53	105
149	**Extra Fine Ground Bone**............................	Claimed	2.00	....	....	....	....	....	14.00	....	....	....	
	Cumberland Bone-Phos. Co., Boston, Mass.	Found	2.32	5 80	11.82	9 46	3.33	2 00	15.15	....	....	17 26	149
150	**Pure Ground Animal Bone**	Claimed	4.00	....	....	....	....	....	21.00	....	....	....	
	I. P. Thomas & Son Co., Philadelphia, Pa..	Found	5.15	12 88	13.51	10 81	9.78	5 87	23.29	....	....	29 56	150
152	**Raw Bone Meal**....................................	Claimed	4.50	....	....	....	....	....	22.00	....	....	....	
	Armour Fertilizer Works, Chicago, Ill	Found	4.35	10 88	19.03	15 22	6.69	4 01	25.72	....	....	30 11	152
154	**Bone Meal**	Claimed	4.85	....	....	....	....	....	22.00	....	....	....	
	Herrick, Harris & Co., Cleveland, O	Found	4.50	11 25	10.86	8 69	8.20	4 92	19.06	....	....	24 86	154
163	**Ground Bone Meal**	Claimed	2.50	....	....	....	....	....	25.00	....	....	....	
	Crocker Fert. and Chem. Co., Buffalo, N. Y.	Found	2.80	7 00	20.97	16 78	7.37	4 42	28.34	....	....	28 20	163

165	**Pure Raw Bone Meal**	Claimed	4.86	....	....	....	....	....	25.44	....	....	....	
	Swift & Company, Chicago, Ill.	Found	4.95	$12 38	14.63	$11 70	8.97	$5.38	23.60	....	....	$29 46	165
166	**Ground Steamed Bone**	Claimed	3.28	....	....	....	....	....	27.03	....	....	....	
	Swift & Company, Chicago, Ill.	Found	3,15	7 88	24.04	19 23	2.97	1 78	27.01	....	....	28 89	166
171	**Royal Bone Meal**	Claimed	4.00	....	....	....	....	....	20.00	....	....	....	
	The Royal Fert. Co., Cleveland, O	Found	4.00	10 00	9.73	7 78	11.89	7.13	21.62	....	....	24 91	171
172	**Pure Ground Bone**	Claimed	5.05	....	....	....	....	....	19.45	....	....	....	
	L. T. Nye, Seville, O.	Found	5.00	12 50	13.97	11 18	6.88	4.13	20.85	....	....	27 81	172
175	**Cyclone Bone**	Claimed	3.00	....	....	....	....	....	22.00	....	....	....	
	The Milsom Rend.and Fert. Co., Buffalo, N.Y	Found	4 70	11 75	15.33	12 26	7.89	4.73	23.22	....	....	28 74	175
180	**Bone Tankage**	Claimed	6.22	....	....	....	....	....	17.34	....	....	....	
	Swift & Company, Chicago, Ill.	Found	6.00	15 00	14.75	11 80	3.29	1.97	18.04	....	....	28 77	180
186	**Fine Raw Bone**	Claimed	4.00	....	....	....	....	....	22.00	....	....	....	
	The North Western Co. Chicago, Ill.	Found	5.00	12 50	13.54	10 83	7.95	4.77	21.49	....	....	28 10	186
200	**Tiger Bone Meal**	Claimed	4.50	....	....	....	....	....	22.00	....	....	....	
	The Western Union Chem. Co., Cleveland, O.	Found	4.00	10 00	13.11	10 49	8.38	5.03	21.49	....	....	25 52	200
201	**Improved Bone**	Claimed	3.00	....	....	....	....	....	21.00	....	....	....	
	The Western Union Chem. Co., Cleveland, O.	Found	1.95	4 88	15.43	12 34	6.00	3.60	21.43	....	....	20 82	201
208	**Pure Raw Bone**	Claimed	4.00	....	....	....	....	....	22.00	....	....	....	
	Walker, Stratman & Co., Pittsburg, Pa	Found	5.15	12 88	9.26	7 41	14.47	8.68	23.73	....	....	28 97	208
209	**Pure Raw Bone Meal**	Claimed	4.50	....	....	....	....	....	24.00	....	....	....	
	J. L. &. H. Stadler, Cleveland, O.	Found	4.30	10 75	15.88	12 70	5.87	3.52	21.75	....	....	26 97	209
216	**Superior Pure Raw Bone**	Claimed	4.00	....	....	....	....	....	22.00	....	....	....	
	The Canton Fert. Co., Canton, O	Found	4.65	11 62	13.71	10 97	8.23	4.94	21.94	....	....	27 53	216
224	**Ground Bone**	Claimed	3.00	....	....	....	....	....	22.00	....	....	....	
	S. M. Hess & Bro., Philadelphia, Pa.	Found	4.10	10 25	18.22	14 58	4.55	2.73	22.77	....	....	27 56	224

TABLE II.—BONE AND UNTREATED ORGANIC MATTER—Continued.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash (when included).		Total value.	Record number.
					In fine bone.		In medium bone.		Total per cent.				
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.		Per cent.	Value.		
226	**Pure Ground Bone**	Claimed	4.50	....	....	....	....	....	24.00	....	....	....	
	The Oakfield Fert. Co., Buffalo, N. Y.........	Found	4.40	$11 00	15.21	$12 17	8.01	$4 81	23.22	....	....	$27 98	226
230	**Extra Pure Ground Bone**..........................	Claimed	2.00	....	....	....	....	....	14.00	....	....	....	
	The Standard Fert. Co., Boston, Mass........	Found	3.40	8 50	19.69	15 75	3.47	2 08	23.16	....	....	26 33	230
231	**Cartaret Bone Meal**	Claimed	2.00	....	....	....	....	....	14.00	....	....	....	
	The Williams & Clark Fert. Co., New York	Found	2.55	6 38	11 32	9 06	3.19	1 91	14.51	....	....	17 35	231
246	**Pure Ground Bone**......................................	Claimed	3.00	....	....	....	....	....	18.00	....	....	....	
	The North Western Fert. Co., Chicago, Ill.	Found	5.10	12 75	14.81	11 85	6.81	4 09	21.62	....	....	28 69	246
248	**Superior Pure Ground Bone**........	Claimed	4.50	....	....	....	....	....	21.00	....	....	....	
	The Bucyrus Fert. Co., Bucyrus, O..............	Found	5.20	13 00	14.45	11 56	8.13	4 88	22.58	....	....	29 44	248
254	**Fine Ground Bone**	Claimed	3.00	....	....	....	....	....	22.00	....	....	....	
	The Thompson & Edw'ds Fert. Co., Chic., Ill.	Found	3.15	7 88	21.73	17 38	3.99	2 39	25.72	....	....	27 65	254
258	**Ohio Bone Meal**	Claimed	4.00	....	....	....	....	....	25.00	....	....	....	
	The Ohio Farmers' Fert. Co., Columbus, O.	Found	5.10	12 75	17.65	14 12	6.53	3 92	24.18	....	....	30 79	258
259	**Fine Ground Bone**........	Claimed	4.25	....	....	....	....	....	22.25	....	....	....	
	The Jones Fert. Co., Cincinnati, O............	Found	3.30	8 25	14.46	11 57	13.08	7 85	27.54	....	....	27 67	259

282	**Pure Raw Bone Meal**........	Claimed	4.50	....	....	....	....	....	22.00	....	....	....	
	E. Rauh & Sons, Indianapolis, Ind........	Found	5.40	$13 50	18.66	$14 93	2.19	$1 31	20.85	....	....	$29 74	282
283	**Pure Bone**........	Claimed	4.00	....	....	....	....	....	20.00	....	....	....	
	E. Rauh & Sons, Indianapolis, Ind........	Found	5.20	13 00	19.66	15 73	1.83	1 10	21.49	....	....	29 83	283
289	**Americus Pure Bone Meal**........	Claimed	....	....	....	....	....	....	20.00	....	....	....	
	The Williams & Clark Fert. Co., N. Y., N.Y.	Found	....	10 38	17.37	13 90	5.33	3 20	22.70	....	....	27 48	289
290	**Superior Pure Ground Bcne with Potash**........	Claimed	3.00	....	....	....	....	....	23.00	1.50	....	....	
	Jas. McCallum & Co., Dayton, O........	Found	4.15	11 75	12.29	9 83	9.08	5 45	21.37	*0.52	0 60	27 63	290
297	**Pure Raw Bone**........	Claimed	4.00	....	....	....	....	....	22.00	....	....	....	
	The Alliance Fertilizer Co., Alliance, O........	Found	4.70	12 62	16.27	13 02	5.28	3 17	25.55	....	....	28 81	297
305	**Big Two Pure Bone Meal**........	Claimed	4.60	....	....	....	....	....	27.00	....	....	....	
	Nelson Morris & Co., Chicago, Ill........	Found	5.05	4 38	26.51	21 21	3.61	2 17	30.12	....	....	27 76	305
311	**Pure Bone Dust**........	Claimed	2.50	....	....	....	....	....	23.00	....	....	....	
	The Newburgh Fert. Co., Cleveland, O........	Found	1.75	4 62	23.43	18 74	7.60	4 56	31.03	....	....	27 92	311
321	**Pure Bone Meal**........	Claimed	4.50	....	....	....	....	....	21.00	....	....	....	
	Elias Ulhrich, Ulhrichsville, O........	Found	1.85	12 25	13.94	11 15	7.68	4 61	21.62	....	....	28 01	321
325	**Crocker's Pure Ground Bone**........	Claimed	5.00	....	....	....	....	....	25.00	....	....	....	
	The Crocker Fert. & Chem. Co., Buffalo, N.Y.	Found	4.90	12 50	14.84	11 87	9.09	5 45	23.93	....	....	29 82	325
327	**Pure Ground Raw Bone**........	Claimed	3.50	....	....	....	....	....	20.00	....	....	....	
	The Zell Guano Co., Baltimore, Md........	Found	5.00	13 75	16.50	13 20	4.93	2 96	21.43	....	....	29 91	327
328	**Acidulated Bone Meal**........	Claimed	4.00	....	....	....	....	....	18.00	....	....	....	
	Armour Fertilizer Works, Chicago, Ill........	Found	5.50	10 00	15.62	12 50	4.53	2 72	20.15	....	....	25 22	328
329	**Great Eastern Pure Bone**........	Claimed	2.00	....	....	....	....	....	22.00	....	....	....	
	The Great Eastern Fert. Co., Rutland, Vt.	Found	5.05	12 62	11.16	8 93	11.16	6 70	22.32	....	....	28 25	329
331	**Pioneer City Bone Meal**........	Claimed	4.00	....	....	....	....	....	23.00	....	....	....	
	The Marietta Bone & Phos. Co., Marietta, O.	Found	4.70	11 75	11.86	9 49	9.51	5 71	21.37	....	....	26 95	331

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*As sulphate.

TABLE II—BONE AND UNTREATED ORGANIC MATTER—Concluded.

Record number.	Name of fertilizer and address of manufacturer.	Claimed and found.	Ammonia.		Phosphoric acid.					Potash (when included).		Total value.	Record number.
					In fine bone.		In medium bone.						
			Per cent.	Value.	Per cent.	Value.	Per cent.	Value.	Total per cent.	Per cent.	Value.		
339	**Big One Pure Raw Bone**........	Claimed	4.00	$13 12	....	....	....	....	24.00	....	....	....	
	Nelson Morris & Co., Chicago, Ill........	Found	5.25	....	13.70	$10 96	10.54	$6 32	24.24	....	....	$30 40	339
342	**Fine Ground Bone Meal**........	Claimed	2.00	....	....	....	....	....	30.00	....	....	....	
	The Ohio Farmers' Fert. Co., Columbus, O.	Found	1.75	4 38	23.88	19 10	7.33	4 40	31.21	....	....	27 88	342
343	**Fine Ground Bone**........	Claimed	3.00	....	....	....	....	....	21.00	....	....	....	
	The Bradley Fert. Co., Boston, Mass........	Found	3.75	9 38	13.99	11 19	5.71	3 43	19.70	....	....	24 00	343
345	**Pure Bone Meal**........	Claimed	3 00	....	....	....	....	....	24.00	....	....	....	
	L. Frank & Sons, Zanesville, O........	Found	3.90	9 75	20.12	16 10	4.57	2 74	24.69	....	....	28 59	345
348	**Pure Ground Bone**........	Claimed	2.00	....	....	....	....	....	22.00	....	....	....	
	Packers' Union Fert. Co., New York, N. Y.	Found	4.60	11 50	11.21	8 97	10.15	6 09	21.36	....	....	26 56	348
362	**Bone Meal**........	Claimed	4.00	....	....	....	....	....	23.00	....	....	....	
	John Dorst, Pomeroy, O........	Found	5.35	13 38	14.23	11 38	7.67	4 60	21.90	....	....	29 36	362
365	**Bone Meal**........	Claimed	4.85	....	....	....	....	....	21.30	....	....	....	
	Geo. A. Bell, Wheelersburg, O........	Found	4.65	11 62	12.11	9 69	9.13	5 48	21.24	....	....	26 79	365
	Pure Bone Meal Steamed........	Claimed	5.10	....	....	....	....	....	23.10	....	....	....	
367	The Ohio Valley Fert. Co., Middleport, O..	Found	5.25	13 12	13.13	10 50	9.32	5 59	22.45			29 21	367

373	**Fine Ground Bone Meal**	Claimed	2.50	....	....	....	....	....	24.00	....	....	....	
	M. Hamm & Co., Chillicothe, O	Found	2.85	7 12	23.24	18 59	5.10	3 06	28.34	....	....	28 77	373
375	**Empire Pure Raw Bone Meal**	Claimed	4.50	....	....	....	....	....	22.00	....	....	....	
	Empire Carbon Works, St. Louis, Mo	Found	5.10	12 75	20.54	16 43	1.08	0 65	21.62	....	....	29 83	375
383	**Bone and Potash 9 Per Cent**	Claimed	2.50	....	....	....	....	....	24.50	9.00	....	....	
	Swift & Co., Chicago, Ill	Found	2.90	7 25	20.89	16 71	1.82	1 09	22.71	7.90	$9 08	34 13	383
385	**Globe Bone Meal**	Claimed	4.00	....	....	....	....	....	20.00	....	....	....	
	The Globe Fertilizer Co., Louisville, Ky	Found	4 95	12 38	10.36	8 29	12.41	7 45	22.77	....	....	28 12	385
390	**German Cologne**	Claimed	6.00	....	....	....	....	....	26.00	....	....	....	
	J. L. Norton, Delaware, O	Found	3.25	8 12	18.36	14 99	5.18	3 11	23.54	....	....	25 92	390
393	**Pure Ground Bone**	Claimed	2.75	....	9.52	....	5.83	....	15.35	0.44	....	....	
	N. Rassel & Co., Toledo, O	Found	4.80	12 00	7.66	6 13	14.86	8 92	22.52	*0.25	0 29	27 34	393
403	**Pure Raw Bone Meal**	Claimed	4.50	....	....	....	....	....	26.00	....	....	....	
	The Pittsburg Provision Co., Pittsburg, Pa	Found	4.60	11 50	16.06	12 85	2.29	1 37	18.35	....	....	25 72	403
407	**Steamed Bone**	Claimed	2.25	....	....	....	....	....	21.00	....	....	....	
	The I. P. Thomas & Son Co., Phila, Pa	Found	4.50	11 25	19.54	15 61	3.72	2 23	23.22	....	....	29 09	407
409	**Bone Meal**	Claimed	4.10	....	....	....	....	....	16.25	....	....	....	
	McWha & Sturgeon, Steubenville, O	Found	4.60	11 50	7.15	5 72	11.66	7 00	18.81	....	....	24 22	409
419	**Bone Flour**	Claimed	4.50	....	....	....	....	....	21.00	....	....	....	
	G. S. Bartlett, Suc. to Cin. Des. Co., Cin., O.	Found	3.85	9 62	21.12	16 90	2.11	1 27	23.23	....	....	27 79	419

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED

And offered for sale in Ohio in 1897, but samples of which were *not found* by the Secretary or Deputy on the market, hence they have not been analyzed, and their valuation does not appear in this report.

MANUFACTURERS' CLAIMS.

Name and address of manufacturer and name of fertilizer.	Ammonia.	Phosphoric acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
The Baugh & Sons Co., Philadelphia, Pa.—					
Baugh's Raw Bone Meal	4.00			21.50	
Geo. A. Bell, Wheelersburg, O.—					
Wheelersburg Special	3.96	7.60	10.49	18.09	3.55
D. Blocher & Co., Gettysburg, Pa.—					
Ammoniated Soluble Bone Phosphate	0.50	10.00	2.00	12.00	1.40
Jas. Bonday Jr. & Co., Baltimore, Md.—					
No. 1 Syndicate Muriate of Potash					38.00–40.00
Old Reliable Brand Genuine Kainit					11.00–13.00
The Bowker Fertilizer Co., Boston, Mass.—					
Potato and Vegetable Phosphate	2.00–3.00	8.00–10.00		10.00–12.00	2.00–4.00
Bowker's Ammoniated Food for Flowers	2.00–3.00	4.00	2.00	6.00	2.00
The Bradley Fertilizer Co., Boston, Mass.—					
Complete Manure	4.50–5.50	8.00–10.00	1.00–2.00	9.00–12.00	6.00–7.00
The Canton Fertilizer Co., Canton, O.—					
Half and Half	2.00–3.00			12.00–14.00	2.00–3.00

The Chemical Co. of Canton, Baltimore, Md.—					
Harrow Brand	0.50–1.50	10.00–12.00	1.00–2.00	11.00–14.00	1.00–2.00
The Clark's Cove Fertilizer Co., New York, N. Y.—					
Good Acre Potato, Hop and Tobacco Grower	2.50–3.50	8.00–10.00	1.00–2.00	9.00–13.00	3.00–4.00
Unicorn Ammo. Superphos	2.25–3.00	8.50–10.00	1.50–3.00	10.00–13.00	2.25–3.00
Sunflower Bone Meal	2.00–4.00	...	...	14.00–18.00	...
The Cleveland Dryer Co., Cleveland, O.—					
Forest City Ammo. Bone Superphos	3.50–4.50	8.00–10.00	3.00–4.00	11.00–12.00	1.00–2.00
Josiah Cope & Co., Lincoln University, Pa.—					
Ammoniated Bone	1.00–2.00	9.00–10.00	1.00–2.00	11.00–12.00	3.00–4.00
The Crocker Fert. and Chem. Co., Buffalo, N. Y.—					
Special Potato Manure	4.50	8.00	1.00	9.00	5.40
Vegetable Bone Superphos.	6.00	6.00	1.00	7.00	5.94
Phosphate	1.50	10.00	1.00	11.00	1.76
Superphosphate No. 2	...	11.00	1.00	12.00	1.35
Special Grape Vine Fertilizer	1.00	8.00	1.00	9.00	4.86
Animal Bone and Potash	1.50	...	...	12.00	1.00
I. P. Felch Buffalo Fert. for Wheat, Oats and Buckwheat	1.50	9.00	1.00	10.00	2.16
E. S. Stevens Wheat and Corn Fertilizer	2.00	8.00	1.00	9.00	2.16
J. I. Biltz Guano	1.00	8.00	1.00	9.00	4.32
J. I. Biltz, Special Fertilizer	1.00	7.00	1.00	8.00	2.16
Berkshire's General Crop Phos	1.00	7 00	1.00	8.00	1.08
S. J. Hawkins' Special Fertilizer	1.50	8.00	1.00	9.00	2.00
High Grade Cereal Guano	1.00	8.00	1.00	9.00	2.00
The Cumberland Bone-Phos. Co., Boston, Mass.—					
Superphosphate	2.50	8.00	2.00	10.00	2.00
Potato Phosphate	1.25	8.00	2.00	10.00	2.00
The Currie Fertilizer Co., Louisville, Ky.—					
Currie's Dissolved Bone	1.25	10.50	1.50	12 00	3.00
Currie's Wheat Special	...	...	...	16.00	...
Currie's Fine Ground Raw Bone Meal	2.50	9.00	13.00	22.00	...
The Detrick Fert. and Chem. Co., Baltimore, Md.—					
Ammo. Bone Phos	1.50–2.00	9.00–11.00	2.00–3.00	11.00–14.00	1.00–1.50
Wheat Fertilizer	1.25–1.75	10.00–13.00	1.00–2.00	11.00–15.00	...
Imperial Compound	1.00–1.50	9.00–11.00	1.50–2.50	10.50–13.50	1.00–1.50

List of Commercial Fertilizers Properly Licensed—Continued.

Manufacturers' Claims.

Name and address of manufacturer and name of fertilizer.	Ammonia.	Phosphoric acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Louis F. Detrick, Baltimore, Md.—					
Kangaroo Komplete Kompound	2.00-2.50	8.00-9.00	3.50-4.00	11.50-13.00	3.00-4.00
The H. C. Gates Fertilizer Co., Brooklyn, O.—					
100% Pure Raw Knuckle Bone Meal	5.00-6.00	....	....	22.00-24.00	....
The Globe Fertilizer Co., Louisville, Ky.—					
Soluble Vegetable Manure	3.00-4.00	8.00-10.00	1.00-2.00	9.00-11.00	3.00-4.00
Big Four Tobacco Grower	2.00-3.00	8.00-10.00	1.00-2.00	9.00-11.00	2.00-3.00
The Great Eastern Fertilizer Co., Rutland, Vt.—					
Great Eastern Grain and Grass	3.00	8.00	1.00	....	2.00
S. M. Hess & Bro., Philadelphia, Pa.—					
Potato and Truck Manure	2.00	8.00	2.00	10.00	6.00
J. W. Hunter, Baltimore, Md.—					
Waring's Fish Ammo. Phos	1.50-2.50	8.00-10.00	2.00-3.00	10.00-13.00	1.00-2.00
The International Seed Co., Rochester, N. Y.—					
International Potato and Truck Manure	1.50	8.00	1.00	9.00	7.00
The Jarecki Chemical Co., Sandusky, O.—					
Double Fish Guano	3.00-4.00	12.00-14.00	1.00-2.00	13.00-16.00	1.00-2.00
The Jones Fertilizer Co., Cincinnati, O.—					
Pure Raw Bone Meal	4.50-5.00	6.00-7.00	15.50-16.50	21.50-23.50	....

S. Kaufman & Sons, Indianapolis, Ind.—					
Special Corn and Wheat Fertilizer	4 00-4.50	6.00	6.00-8.00	12.00-14.00	1.50
Soluble Bone and Potash	2.15	8.05	5.56	13.61	1.50
Edwin Lamb, Youngstown, O.—					
Night Soil Guano					
Lister's Agr. Chemical Works, Newark, N. J.—					
Special Potato Fertilizer	2.00-3.00	8.00-10.00	1.00-2.00	9.00-11.00	3.00-4.00
The Loudenback Fertilizer Co., Urbana, O.—					
Urbana Ammoniated Bone	3.00	10.00-12.00	1.00-2.00	14.00	3.00
Jas. McCallum & Co., Dayton, O.—					
Raw Bone and Phosphate	2.00-3.00	10.00-12.00	4.00-6.00	16.00-18.00	1.50-2.00
High Grade Tobacco and Potato Special	4.00-5.00	9.00-11.00	2.00-3.00	12.00-14.00	6.00-7.00
The A. B. Mayer Manufacturing Co., St. Louis, Mo.—					
Anchor Brand Pure Bone Meal	4.50-5.00			21.00-23.00	
Michigan Carbon Works, Detroit, Mich.—					
Homestead Vegetable Grower	5.50-6.50	5.00-6.50		6 00-7.00	6.50-7.50
The Newburgh Fertilizer Co., Cleveland, O.—					
Ammoniated Phosphate	1.50-2.50	9.00-10.00		10.00-11.00	1.00-2.00
The North Western Fertilizing Co., Chicago, Ill.—					
Ammoniated Dissolved Bone	2.50-3.50	8.00-9.00	4.00-4.50	12.00-13.00	0.54-1.08
The Niagara Fertilizer Works, Buffalo, N. Y.—					
Niagara Triumph	3.00	8.00	1.00	9.00	2.16
Niagara Queen City Phosphate		11.00	1.00	12.00	
Niagara Bone and Potash	1.50			11.00	1.00
Niagara Bone Meal	3.00			29.00	
The Pacific Guano Co., New York, N. Y.—					
Dissolved Bone and Potash		10.00-12.00	1.00-2.00	11.00-14.00	2.00-3.00
Fine Ground Bone	2.00-4.00			14.00-18.00	
Ground Bone and Potash	2.25-3.25			10.00-15.00	2 00-3.00
The Packers' Union Fertilizer Co., New York, N. Y.—					
Acidulated Bone		14.00	1.00	15.00	
Wheat, Oats and Clover		11.00	1.00	12.00	2.00

List of Commercial Fertilizers Properly Licensed—Continued.
Manufacturers' Claims.

Name and address of manufacturer and name of fertilizer.	Ammonia.	Phosphoric acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
The Pittsburg Provision Co., Pittsburg, Pa.—					
Crescent Butchers' Ground Bone	3.00–4.00	....	....	15.00–17.00	....
Pure Bone and Potash (Tobacco Special)	3.00–4.00	12.00–16.00	2.00–4.00	14.00–16.00	3.00–4.00
Keystone Fertilizer	2.00–3 00	9.00–12.00	2.00–3.00	11.00–13.00	1.50–2.00
Guano Fertilizer	2.00–3.00	9.00–12.10	2.00-3.00	11.00–13.00	....
The Powell Fert. and Chem. Co., Baltimore, Md.—					
Bone and Potash Fertilizer	....	10.00	2.00	12.00	2.00
Red Bag Fertilizer	1.25	8.00	2.00	10.00	1.00
The Quinnipiac Co., New York, N. Y.—					
Special Potato	1.50–2.00	6.00–8.00	1.00–2.00	7.00–9.00	5.00–6.00
The Rasin Fertilizer Co., Baltimore, Md.—					
Ammoniated Superphos	1.00	8.00	1.00	9.00	1.00
Special High Grade Potash Fert	....	10.00	1.00	11.00	5.00
The Read Fertilizer Co., Charleston, S. C.—					
Alkaline Bone	....	10.00–12.00	1.00–3.00	11.00–15.00	2.00–4.00
XXX Dissolved Bone	....	13.00–15.00	1.00–3.00	14.00–18.00	....
Bone and Potash	....	10.00–12.00	1.00–3.00	11.00–15.00	2.00–4.00
The Read Fertilizer Co., New York, N. Y.—					
Read's Standard	1.00	8.00	1.00	9.00	4.00
Practical Potato Special	1.00	4.00	1.00	5.00	8.00
Pure Ground Bone	3.00	....	....	22.00	....
Alkaline Bone	....	10.00	1.00	11.00	3.00

John S. Reese & Co., Baltimore, Md.—					
Reese,s Challenge Crop Grower	1.00	8.00	1.00	9.00	2.00
Reese's Half and Half	1.00	8.00	2.00	10.00	1.00
G. W. Rickard, Medina, O.—					
Rickard 's Animal Bone Phosphate	3.00	10.00	1.00	11.00	3.00
The Scientific Fertilizer Co., Pittsburg, Pa.—					
Scientific Tobacco Fertilizer	3·00–4.00	7.00–8.00	4.00–5.00	11.00–12.00	4.00–5.00
Pure Raw Bone	4.00–5.00	......	......	22.00–25.00	......
The South Eastern Fertilizer Co., Cleveland, O.—					
Farmers' General Crop Phosphate with Potash	......	8.00–10.00	4.00–6.00	12.00–16.00	1.00–2.00
The Springfield Fertilizer Co., Springfield, O.—					
Globe	2.50–3 50	10.00–12.00	0.50–1.00	......	2.00–2.50
Atlas	2.00–3 00	8.00–10.00	0.50–1.00	......	2.35–2.85
Soluble	1.00–2.00	6.50–8.00	0.50–1.00	......	2.35–2.85
Favorite	......	8.00–10.00	0.50–1.00	......	1.50–2.00
Number Four	......	8.00–10.00	0.50–1.00	......	......
I. X. L. Ground Bone	2.25–3.00	......	......	11.45–12.82	......
Tobacco and Vegetable	4.50–5.50	6.00–8.00	0.25	6.25–8.25	7.00–9.00
Pure Ground Bone	4.00–5.00	......	......	22.90	......
J. L. & H. Stadler, Cleveland, O.—					
Valley Potato Manure	3.00–4.00	6.00–7.00	2.00–3.00	9.00–10.00	......
Standen and Jackson, Elyria, O.—					
Pure Bone Meal	4.55	......	......	21.43	......
The Standard Fertilizer Co., Boston, Mass.—					
Ammoniated Dissolved Bone	2.00	9.00	......	10.00	2.00
"A" Brand	1.00	7.00	2.00	9.00	1.00
Potato Special	1.25	8.00	2.00	10.00	2.00
The Star Fertilizer Co., Cleveland, O.—					
Star Pure Bone	3.50–4.50	18.00–20.00	......	......	......
R. Stephens & Co., Ashtabula, O.—					
Buncombe Fertilizer	2.90	14.21	9.59	23.80	0.35

List of Commercial Fertilizers Properly Licensed—Concluded.
Manufacturers' Claims.

Name and address of manufacturer and name of fertilizer.	Ammonia.	Phosphoric acid.			Potash.
		Available.	Insoluble.	Total.	
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
The Susquehanna Fertilizer Co., Baltimore, Md.—					
Crescent Bone Phos	1.50–2.00	9.00–11.00			1.00–2.00
Swift & Company, Chicago, Ill —					
Bone Potash	3.49		16.14	24.58	3.00
The I. P. Thomas & Son Co., Philadelphia, Pa.—					
Potato Manure	3.00–4.00	9.00–11.00	2.00–3.00		6.00–8.00
Farmers' Choice Bone Phos	2.00–3.00	9.50–11.00	1.50–2.50		2.00–4.00
Special Corn Fertilizer		10.00–12.00	2.00–3.00		6.50–8.00
Raw and Dissolved Bone	2.00–3.00	8.00–10.00	10.00–15.00	18.00–25.00	
Raw and Dissolved Bone and Potash	1.00–2.50	5.50–7.00	6.00–8.00	11.50–15.50	5.00–8.00
The Walker Fertilizer Co , Clifton Springs, N. Y.—					
Walker's Excelsior Brand Food for House Plants	8.00	12.00			11.00
Walker, Stratman & Co., Pittsburg, Pa.—					
Potato Special	2.00–3.00	9.00–10.00	4.00–5.00	13.00–15.00	5.00–6.00
Butchers' Bone Meal	3.50–4.50			16.00–20.00	
The Walton Fertilizer Co., Warren, O.—					
Pure Bone and Potash				12.00–13.00	2.00
M. E. Wheeler & Co., Rutland, Vt.—					
High Grade Potato Manure	2 50	8.00	1.00	9.00	3.25
High Grade Corn Fertilizer	2.00	8.00	1.00	9.00	2.00
High Grade Fruit Fertilizer		10.00	2.00	12.00	8.00

M. E. Wheeler & Co., Rutland, Vt.—					
High Grade Grass and Oats	....	11.00	1.00	12.00	2.00
High Grade Pure Ground Bone	2.00	....	....	22.00	....
The Williams & Clark Fertilizer Co., New York, N. Y.—					
Universal Ammoniated Dissolved Bone	2.00–3.00	8.00–11.00	1.00–2.00	9.00–13.00	2.00–3.00
The Zell Guano Co., Baltimore, Md.—					
Zell's Ammoniated Bone Superphosphate	2.50–3.50	8.00–10.00	2.00–3.00	10.00–12.00	2.50–3.50
Zell's Economizer	1.00–2.00	9.00–11.00	2.00–3.00	11.00–13.00	1.00–2.00
The Little Giant	1.00–2.00	8.00–9.00	2.00–3.00	10.00–12.00	1.00–2.00

INDEX OF MANUFACTURERS,

WITH LIST OF BRANDS LICENSED FOR THE YEAR ENDING DECEMBER 31, 1897.

The Alliance Fertilizer Co., Alliance, O.

No. 297. Pure Raw Bone.
No. 298. Button Bone.
No. 299. Soluble Bone Potash.
No. 300. Bone Black Phosphate and Potash.

The American Reduction Co., Pittsburg, Pa.

No. 135. Powter Brand.
No. 173. Special Potato.
No. 193. Powter's General Phosphate.
No. 273. Common Sense.

Armour Fertilizer Works, Chicago, Ill.

No. 82. Bone Meal.
No. 83. Ammoniated Bone with Potash.
No. 84. Grain Grower.
No. 152. Raw Bone Meal.
No. 153. Bone, Blood and Potash.
No. 239. Onion Fertilizer.
No. 263. All Soluble.
No. 264. Acid Phosphate.
No. 328. Acidulated Bone Meal.
No. 364. Bone and Blood.

The Baltimore Guano Co., Baltimore, Md.

No. 197. Baltimore Special.
No. 198. Farmers' Dissolved Bone.
No. 294. Game Guano.
No. 295. Farmers' Alkaline Bone.
No. 296. Dissolved Bone Phosphate.

Geo S. Bartlett, Successor to The Cincinnati Desiccating Co., Cincinnati, O.

No. 247. Ohio Valley Phosphate.
No. 303. Gilead Phosphate, Indian Brand.
No. 419. Bone Flour.

The Baugh and Sons Co., Philadelphia, Pa.

No. 335. Baugh's Double Eagle Phosphate
No. 336. Baugh's Acid Phosphate.
No. —. Baugh's Raw Bone Meal.

George A. Bell, Wheelersburg, O.

No. 365. Bone Meal.
No. —. Wheelersburg Special.

D. Blocher & Co., Gettysburg, Pa.

No. 394. High Grade Super Phosphate of Bone.
No. —. Ammoniated Soluble Bone Phosphate.

Jas. Bonday Jr. & Co., Baltimore, Md.

No. 304. No. 1 Syndicate, Sulphate of Potash.
No. —. No. 1 Syndicate, Muriate of Potash.
No. —. Old Reliable Brand Genuine Kainit.

The Bowker Fertilizer Co., Boston, Mass.

No. 50. Dissolved Bone Phosphate with Potash.
No. 51. Harvest Bone with Potash.
No. 52. Superphosphate with Potash.
No. 53. Wheat Grower.
No. 54. Ammoniated O. I. O. Phospha
No. 55. Market Bone.
No. 108. Sure Crop Phosphate.
No. 194. Ammoniated Dissolved Bone.
No. 315. Dissolved Bone Phosphate.
No. 387. Square Brand, Bone and Potash.
No. 388. Canada Unleached Hardwood Ashes
No. —. Potato and Vegetable Phosphate.
No. —. Ammoniated Food for Flowers.

The Bradley Fertilizer Co., Boston, Mass.

No. 12. Dissolved Bone with Potash.
No. 13. Niagara Phosphate.
No. 14. Acid Phosphate.
No. 15. Potato and Root Phosphate.
No. 26. Dissolved Bone, Justice Brand.
No, 27. Alkaline Bone.
No. 76. B. D. Sea Fowl Guano.
No. 77. Potato Fertilizer.
No. 322. Abattoir Bone Dust.
No. 343. Fine Ground Bone.
No. 363. Circle Brand, Ground Bone with Potash
No. —. Complete Manure.

The Bucyrus Fertilizer Co., Bucyrus, O.

No. 248. Superior Pure Ground Bone.
No. 249. Super Phosphate with Potash.
No. 250. Ohio Farmers' Phosphate.
No. 251. Buckeye Wheat Grower.
No. 252. Dissolved Bone.

The Canton Fertilizer Co., Canton, O.

No. 216. Superior Pure Raw Bone.
No. 217. Dissolved Raw Bone and Potash.
No. 218. Soluble Bone and Potash.
No. 219. Bone and Meat.
No. 220. Peerless Bone Phosphate.
No. —. Half and Half.

The Chemical Co. of Canton, Baltimore, Md.

No. 70 Baker's Dissolved Bone Phosphate.
No. 71. Baker's Special W. C. and G. Mixture.
No. 72. Soluble Bone and Potash.
No. —. Harrow Brand.

The Clarke's Cove Fertilizer Co., New York, N. Y.

No. 85. Defiance.
No. 86. King Philip Guano.
No. 87. Triumph Bone and Potash.
No. 88. Sovereign Acid Phosphate.
No. —. Good Acre Potato, Hop and Tobacco Grower.
No. —. Unicorn Ammoniated Superphosphate.
No. —. Sunflower Bone Meal.

E. A. Clendenin & Bro., Colora, Md.

No. 416. T. & P. Superphosphate.

The Cleveland Dryer Co., Cleveland, O.

No. 57. Buckeye Ammoniated Bone Super Phosphate.
No. 58. Ohio Seed Maker.
No. 59. Ohio Seed Maker with Potash.
No. 60. XXX Phosphate.
No. 61. XXX Phosphate with Potash.
No. 62. Horsehead Phosphate.
No. 63. Phospho Bone.
No. 64. Square Bone.
No. 94. Superior Bonemeal.
No. 188. Potato and Vegetable Fertilizer.
No. 189. Ammoniated Dissolved Bone.
No. 236. White Burley Tobacco Fertilizer.
No. 301. Bone and Phosphate Mixture.
No. —. Forest City Ammoniated Bone Super Phosphate.

The Cleveland Provision Co., Cleveland, O.

No. 176. Packing House Fertilizer.

The Columbus Phosphate Co., Columbus, O.

No. 411. Capital City Grain and Grass Grower.
No. 412. Capital City Wheat Grower.
No. 413. Capital City Dissolved Bone and Potash.

Josiah Cope & Co., Lincoln University, Pa.

No. 357. Try Me Bone Phosphate.
No. 358. Soluble Bone and Potash.
No. 359. Acidulated Phosphate.
No. —. Ammoniated Bone.

E. P. Critchfield, Howard, O.

No. 243. Button Bone Fertilizer.
No. 244. Standard Phosphate.

The Crocker Fertilizer and Chemical Co., Buffalo, N. Y.

No. 126. New Rival Ammoniated Superphosphate.
No. 127. Universal Grain Grower.
No. 128. General Crop Phosphate.
No. 129. Practical Ammoniated Superphosphate.
No. 161. Potato, Hop and Tobacco Phosphate.
No. 162. Erie Fertilizer.
No. 163. Ground Bone Meal.
No. 164. Niagara Phosphate.
No. 213. Austinburg Special.
No. 227. J. I. Blitz Wheat, Oats and Barley Fertilizer.
No. 267. Ammoniated Wheat and Corn Phosphate.
No. 268. Superior Alkaline Bone.
No. 302. Ammoniated Bone Superphosphate.
No. 325. Pure Ground Bone.
No. —. Special Potato Manure.
No. —. Vegetable Bone Superphosphate.
No. —. Superphosphate No. 2.
No. —. Special Grape Vine Fertilizer.
No. —. Phosphate.
No. —. Animal Bone and Potash.
No. —. High Grade Cereal Guano.
No. —. I. P. Felch Buffalo Fertilizer for Wheat, Oats and Buckwheat.
No. —. E. S. Stevens Wheat and Corn Fertilizer.
No. —. J. I. Blitz Guano.
No. —. J. I. Blitz Special Fertilizer.
No. —. Berkshire's General Crop Phosphate.
No. —. S. J. Hawkins, Special Fertilizer.

The Cumberland Bone-Phosphate Co., Boston, Mass.

No. 78. Dissolved Bone Phosphate.
No. 79. Bone and Potash.
No. 147. Guano.
No. 148. Seeding Down.
No. 149. Extra Fine Ground Bone
No. —. Superphosphate.
No. —. Potato Phosphate.

The Currie Fertilizer Co., Louisville, Ky.

No. 28. Currie's Soluble Bone.
No. 29. Currie's Corn and Oats Special.
No. 389. Currie's Wheat Grower.
No. —. Currie's Dissolved Bone.
No. —. Currie's Wheat Special.
No. —. Currie's Fine Ground Raw Bone Meal.

Darling & Co., Chicago, Ill.

No. 41. Farmers' Favorite Brand.
No. 42. Sure Winner Brand.
No. 43. Pure Ground Bone.
No. 68. Chicago Brand.
No. 69. Ground Raw Bone.

The Detrick Fertilizer and Chemical Co., Baltimore, Md.

No. 260. Alkaline Bone.
No. 261. Soluble Bone Phosphate.
No. —. Ammoniated Bone Phosphate.
No. —. Wheat Fertilizer.
No. —. Imperial Compound.

Louis F. Detrick, Successor to the Wooldridge Fertilizer Co., Baltimore, Md

No. 262. XXtra Acid Phosphate.
No. 349. Bone and Potash Mixture.
No. 350. Sockless and Shoeless A. A. Phosphate.
No. —. Kangaroo Komplete Kompound.

John Dorst, Pomeroy, O.

No. 362. Bone Meal.

The Empire Carbon Works, St. Louis, Mo.

No. 375. Empire Pure Raw Bone Meal.

L. Frank & Sons, Zanesville, O.

No. 345. Pure Bone Meal.
No. 381. General 2-8-2.

The H. C. Gates Fertilizer Co., Brooklyn, O.

No. —. 100% Pure Raw Knuckle Bone Meal.

R. K. Giffen & Co., Wheeling, W. Va.

No. 406. Daisy Fertilizer.

The Globe Fertilizer Co., Louisville, Ky.

No. 30. Globe Bone Dust.
No. 48. Bone and Potash.
No. 49. Progress Wheat and Corn Grower.
No. 324. Big Four Phosphate.
No. 385. Globe Bone Meal.
No. 386. Globe Wheat Grower.
No. —. Soluble Vegetable Manure.
No. —. Big Four Tobacco Grower.

The Great Eastern Fertilizer Co., Rutland, Vt.

No. 34. Great Eastern Corn Phosphate.
No. 35. Great Eastern Wheat Special.
No. 36. Great Eastern Dissolved Bone.
No. 106. Great Eastern Vegetable Vine and Tobacco.
No. 107. Great Eastern Soluble Bone and Potash.
No. 329. Great Eastern Pure Bone.
No. 330. Great Eastern English Wheat Grower.
No. —. Great Eastern Grain and Grass.

Griffith & Boyd, Baltimore, Md.

No. 379. S. C. and C. Guano.

M. Hamm & Co., Chillicothe, O.

No. 65. O. K.
No. 66. Hamm's Special.
No. 67. Acidulated Bone.
No. 372. Dissolved Bone with Potash.
No. 373. Fine Ground Bone Meal.
No. 374. Economy.
No. 421. Dissolved Bone.

Herrick, Harris & Co., Cleveland, O.

No. 154. Bone Meal.
No. 155. Special Potato Phosphate.
No. 156. Lindale.
No. 157. Pride of Ohio.
No. 225. Corn Grower.
No. 319. Acid Phosphate.

S. M. Hess & Bro., Philadelphia, Pa.

No. 98. Keystone Bone Phosphate.
No. 202. Acid Phosphate.
No. 222. Ammoniated Bone Super Phosphate.
No. 223. Emperor Phosphate.
No. 224. Ground Bone.
No. ——. Potato and Truck Manure.

J. R. Hunter, Jackson, O.

No. 355. Royal Phosphate.
No. 356. Hunter's Diamond Bone.

J. W. Hunter, Baltimore, Md.

No. 96. Waring's T. and P. Superphosphate.
No. 338. Waring's Q. and L. Ammoniated Phosphate.
No. —. Waring's Fish Ammoniated Phosphate.

The International Seed Co., Rochester, N. Y.

No. 280. International Grain and Grass Fertilizer.
No. 281. International Electric Guano.
No. —. International Potato and Truck Manure.

The Jarecki Chemical Co., Sandusky, O.

No. 8. Lake Erie Fish Guano.
No. 9. Super Phosphate.
No. 10. C. O. D. Phosphate.
No. 11. Fish and Potash, Tobacco and Potato Food.
No. 104. Dissolved Bone Black, Wheat Special.
No. 105. Pure Ground Bone.
No. 346. O. K. Fertilizer.
No. 415. Fish and Potash, Grain Special.
No. 420. Bone and Phosphate Mixture.
No. —. Double Fish Guano.

G. P. Jarvis, Bigrun, O., Agent Natural Plant Food Co., Washington, D. C.

No. 417. Natural Plant Food.

The Jones Fertilizing Co., Cincinnati, O.

No. 89. Tobacco and Potato Grower.
No. 90. Special Tobacco Grower.
No. 91. Miami Valley Phosphate.
No. 92. Jones' Reliable Phosphate.
No. 93. Jewel Phosphate.
No. 259. Fine Ground Bone.
No. 353. Acidulated Bone.
No. 354. Ammoniated Bone Meal.
No. —. Pure Raw Bone Meal.

S. Kaufman & Sons, Indianapolis, Ind.

No. —. Special Corn and Wheat Fertilizer.
No. —. Soluble Bone and Potash.

Edwin Lamb, Youngstown, O.

No. —. Night Soil Guano.

The Lazaretto Guano Co., Baltimore, Md.

No. 344. Lazaretto Dissolved S. C. Bone.

D. C. Liechty, Orrville, O.

No. 291. Animal Bone Phosphate.

Lister's Agricultural Chemical Works, Newark, N. J.

No. 184. Ammoniated Dissolved Bone Phosphate.
No. 185. Animal Bone and Potash No. 2.
No. 269. U. S. Superphosphate.
No. 270. Lister's Special Wheat Fertilizer.
No. —. Special Potato Fertilizer.

The Loudenback Fertilizer Co., Urbana, O.

No. 109. Urbana Acidulated Bone.
No. 110. Urbana Bone Phosphate and Potash.
No. 337. Urbana Animal Tankage and Guano.
No. 380. Urbana Sweepstakes Bone.
No. —. Urbana Ammoniated Bone.

Geo. W. Mace, Greenville, O.

No. 276. Big Crop Bone Phosphate and Potash.
No. 376. Dissolved Bone Phosphate and Potash.

James McCallum & Co., Dayton, O.

No. 99. Ammoniated Dissolved Bone.
No. 100. Spot Cash.
No. 101. Miami Phosphate.
No. 290. Superior Pure Ground Bone with Potash.
No. 360. Ruby Phosphate.
No. —. Raw Bone and Phosphate.
No. —. High Grade Tobacco and Potato Special.

McLean, Dahl & Co., Washington C. H., O.

No. 56. Leader.
No. 414. Special.

McWha & Sturgeon, Steubenville, O.

No. 409. Bone Meal.

The Marietta Bone & Phosphate Co., Marietta, O.

No. 331. Pioneer City Bone Meal.
No. 332. Pioneer City Favorite.
No. 333. Pioneer City Dissolved Bone.
No. 334. Pioneer City Hustler Phosphate,

The Mapes Formula and Peruvian Guano Co., New York, N. Y.

No. 178. Complete Manure A. Brand.
No. 179. Ammoniated Dissolved Bone with Potash.

The A. B. Mayer Manufacturing Co., St. Louis, Mo.

No. 234. Anchor Brand Corn and Wheat Grower.
No. 235. Anchor Brand Complete Fertilizer.
No. —. Anchor Brand Pure Bone Meal.

Michigan Carbon Works, Detroit, Mich.

No. 1. Homestead, a Bone Black Fertilizer.
No. 2. Jarves Drill Phosphate.
No. 3. Desiccated Bone.
No. 17. Homestead Potato Grower.
No. 18. Perfection Fruit Grower.
No. 19. Banner Raw Bone Flour.
No. 214. Homestead Tobacco Grower.
No. 215. Jarves Tobacco Fertilizer.
No. 397. Banner Dissolved Bone.
No. 398. Acid Phosphate.
No. 399. Red Line Ammoniated Phosphate.
No. 400. Red Line Phosphate with Potash.
No. 401. Red Line Complete Manure.
No. —. Homestead Vegetable Grower.

The Milsom Rendering and Fertilizer Co., Buffalo, N. Y.

No. 111. Wheat, Oats and Barley Phosphate.
No. 112. Erie King.
No. 113. Buffalo Guano.
No. 114. Dissolved Bone.
No. 115. Corn Fertilizer.
No. 116. Buffalo Fertilizer.
No. 117. Potato, Hop and Tobacco Fertilizer.
No. 118. Vegetable Bone Fertilizer.
No. 175. Cyclone Bone.
No. 203. Dissolved Bone and Potash.

L. Morris, Sabina, O.

No. 395. Pleasant Valley.

Nelson Morris & Co., Chicago, Ill.

No. 293. Big Four Pure Bone Phosphate.
No. 305. Big Two Pure Bone Meal.
No. 306. Big Three Pure Bone Phosphate.
No. 339. Big One Pure Raw Bone.

W. F. Morrow, Hartwell, O.

No. 377. The Nitid Plant Food.

The Newburgh Fertilizer Co., Cleveland, O.

No. 97. Champion with Potash.
No. 136. Champion Fertilizer.
No. 177. Western Reserve Fertilizer
No. 311. Pure Bone Dust.
No. 312. Victor Phosphate.
No. 341. Acme Bone.
No. —. Ammoniated Phosphate.

The North Western Fertilizer Co., Chicago, Ill.

No. 95. Twenty-six Dollar Phosphate.
No. 137. Acidulated Bone.
No. 143. Garden City Super Phosphate.
No. 144. Bone and Potash.
No. 145. Dissolved Bone Phosphate.
No. 146. Potato Grower.
No. 186. Fine Raw Bone.
No. 187. Acidulated Bone and Potash.
No. 245. Challenge Corn Grower.
No. 246. Pure Ground Bone.
No. 370. Prairie Phosphate.
No. 371. Quick Acting Phosphate.
No. —. Ammoniated Dissolved Bone.

Niagara Fertilizer Works, Buffalo, N. Y.

No. 158. Niagara Wheat and Corn Producer.
No. 159. Niagara Grain and Grass Grower.
No. 160. Niagara Potato, Tobacco and Hop Phosphate.
No. —. Niagara Triumph.
No. —. Niagara Queen City Phosphate.
No. —. Niagara Bone and Potash.
No. —. Niagara Bone Meal.

J. L. Norton, Delaware, O.

No. 390. German Cologne.

L. T. Nye, Seville, O.

No. 172. Pure Ground Bone.

The Oakfield Fertilizer Co., Buffalo, N

No. 119. High Farming.
No. 120. Domestic.
No. 121. Golden Sheaf.
No. 122. Great Value.
No. 195. Standard.
No. 196. Potato and Tobacco.
No. 226. Pure Ground Bone.

The G. Ober & Sons Co., Baltimore, Md.

No. 277. Dissolved Bone Phosphate.
No. 318. Special Ammoniated Dissolved Bone.
No. 408. Farmers' Standard Ammoniated Phosphate.

The Ohio Farmer's Fertilizer Co., Columbus, O.

No. 130. Seeding Down Fertilizer.
No. 131. Ohio Wheat Maker.
No. 132. Corn, Oats and Wheat Fish Guano.
No. 133. Soluble Bone and Potash.
No. 134. Potato and Truck Fertilizer.
No. 257. Superior Phosphate.
No. 258. Ohio Bone Meal.
No. 323. $14.75 S. C. Rock.
No. 342. Fine Ground Bone Meal.

The Ohio Valley Fertilizer Co., Middleport, O.

No. 367. Pure Bone Meal Steamed.

The Pacific Guano Co., New York, N. Y.

No. 37. Nobsque Guano.
No. 38. A. No. 1 Phosphate.
No. 39. Dissolved Bone Phosphate of Lime.
No. 40. Acid Phosphate.
No. 140. Potato Phosphate.
No. —. Dissolved Bone and Potash.
No. —. Fine Ground Bone.
No. —. Ground Bone and Potash.

The Packers' Union Fertilizer Co., New York, N. Y.

No. 286. Universal.
No. 287. American Wheat Grower.
No. 348. Pure Ground Bone.
No. —. Acidulated Bone.
No. —. Wheat, Oats and Clover.

The Pittsburg Provision Co., Pittsburg, Pa.

No. 204. Corn and Potato Fertilizer.
No. 403. Pure Raw Bone Meal.
No. 404. Acid Phosphate.
No. —. Crescent Butcher's Ground Bone.
No. —. Pure Bone and Potash (Tobacco Special.)
No. —. Keystone Fertilizer.
No. —. Guano Fertilizer.

The Powell Fertilizer and Chemical Co., Baltimore, Md.

No. 292. Dissolved Soluble Bone Phosphate.
No. —. Bone and Potash Fertilizer.
No. —. Red Bag Fertilizer.

The Quinnipiac Co., New York, N. Y.

No. 20. Climax Phosphate.
No. 21. Dissolved Bone and Potash.
No. 22. Mohawk Fertilizer.
No. 47. Ammoniated Dissolved Bone.
No. 288. Soluble Dissolved Bone.
No. 351. Plain Superphosphate.
No. 352. Uncas Bone Meal.
No. —. Special Potato.

The Rasin Fertilizer Co., Baltimore, Md.

No. 45 Soluble Sea Island Guano.
No. 46. Bone and Potash.
No. 275. Acid Phosphate.
No. 361. Dissolved Bone.
No. —. Ammoniated Superphosphate.
No. —. Special High Grade Potash Fertilizer.

N. Rassel & Co., Toledo, O.

No. 392. Maumee Valley Fertilizer.
No. 393. Pure Ground Bone.

E. Rauh & Sons, Indianapolis, Ind.

No. 23. Special Corn and Potato Fertilizer.
No. 24. Peerless Bone.
No. 25. Dissolved Bone and Potash.
No. 282. Pure Raw Bone Meal.
No. 283. Pure Bone.
No. 418. Half Pure Raw Bone and Half Pure Bone Phosphate.

The Read Fertilizer Co., Charleston, S. C.

No. —. Alkaline Bone.
No. —. XXX Dissolved Bone.
No. —. Bone and Potash.

The Read Fertilizer Co., New York, N. Y.

No. 181. Leader Guano.
No. 182. Farmer's Friend.
No. 183. Dissolved Bone.
No. —. Read,s Standard.
No. —. Practical Potato Special.
No. —. Pure Ground Bone.
No. —. Alkaline Bone.

John S. Reese & Co., Baltimore, Md.

No. 368. Crown Phosphate and Potash,
No. 369, Reese's Elm Phosphate.
No. —. Reese's Challenge Crop Grower.
No. —. Reese's Half and Half.

G. W. Rickard, Medina, O.

No. —. Rickard's Animal Bone Phosphate.

The Royal Fertilizer Co., Cleveland, O.

No. 169. Old Honesty.
No. 170. Alliance Super Phosphate.
No. 171. Royal Bone Meal.
No. 190. Lawrence Wheat Special.
No. 191. Potato, Vegetable and Tobacco.
No. 192. P. A. P. Phosphate.

John Ruehle, Defiance, O.

No. 396. Defiance Fertilizer.

The J & F. Schroth Packing Co., Cincinnati, O.

No. 240. Corn and Wheat Grower.
No. 241. Queen City Phosphate.
No. 242. Schroth's Special.

The Scientific Fertilizer Co., Pittsburg, Pa.

No. 422. Scientific Potato Fertilizer.
No. 423. Scientific Economy Fertilizer.
No. 424. Scientific Corn and Grain Fertilizer.
No. 425. Bone and Meat.
No. —. Scientific Tobacco Fertilizer.
No. —. Pure Raw Bone.

Sharpless & Carpenter, Philadelphia, Pa.,

No. 307. No. 1 Bone Phosphat.
No. 308. No. 2 For Grain and Grass.
No. 309. Soluble Bone and Potash.
No. 310. Acid Phosphate.

The South Eastern Fertilizer Co., Cleveland O.

No. 221. Farmers' General Crop Phosphate.
No. 410. Farmers' Bone Phosphate.
No. —. Farmers' General Crop Phosphate with Potash.

The Springfield Fertilizer Co., Springfield, O.

No. 274. Number One.
No. —. Globe.
No. —. Atlas.
No. —. Soluble.
No. —. Favorite.
No. —. Number Four.
No. —. I. X. L. Ground Bone.
No. —. Tobacco and Vegetable.
No. —. Pure Ground Bone.

J. L. & H. Stadler, Cleveland, O.

No. 209. Pure Raw Bone Meal.
No. 210. Valley Phosphate.
No. 211. Live and Let Live Phosphate.
No. —. Valley Potato Manure.

Standen & Jackson, Successors to Boynton & Standen, Elyria, O.

No. —. Pure Bone Meal.

The Standard Fertilizer Co., Boston, Mass.

No. 6. Bone and Potash.
No. 7. Dissolved Bone Phosphate.
No. 229. Guano.
No. 230. Extra Fine Ground Bone.
No. —. Ammoniated Dissolved Bone.
No. —. "A" Brand.
No. —. Potato Special.

B. T. Stanley, Berlin Center, O.

No. 402. Bone Black Crop Multiplier.

The Star Fertilizer Co., Cleveland, O.

No. —. Star Pure Bone.

R. Stephens & Co., Ashtabula, O.

No. —. Buncombe Fertilizer.

Strecker Bros., Marietta, O.

No. 73. Pure Ground Bone.
No. 74. Climax Phosphate.
No. 75. Acme Phosphate.

The Susquehanna Fertilizer Co., Baltimore, Md

No. 378. Soluble Bone Phosphate.
No. —. Crescent Bone Phosphate.

Swift & Company, Chicago, Ill.

No. 165. Pure Raw Bone Meal.
No. 166. Ground Steamed Bone.
No. 167. Bone Tankage and Potash.
No. 168. Superphosphate.
No. 180. Bone Tankage.
No. 347. Swift's Special Pure Superphosphate.
No. 382. Bone Tankage and Potash 6%.
No. 383. Bone and Potash 9%.
No. 384. Superphosphate and Potash 9%.
No. —. Bone and Potash.

The I. P. Thomas & Son Co., Philadelphia, Pa.

No. 150. Pure Ground Animal Bone.
No. 151. Wheat Special.
No. 228. Normal Bone Phosphate.
No. 271. Improved Super Phosphate.
No. 272. S. C. Phosphate.
No. 407. Steamed Bone.
No. —. Potato Manure.
No. —. Farmers' Choice Bone Phosphate.
No. —. Special Corn Fertilizer.
No. —. Raw and Dissolved Bone.
No. —. Raw and Dissolved Bone and Potash.

The Thompson & Edwards Fertilizer Co., Chicago, Ill.

No. 237. Sure Growth Super Phosphate.
No. 238. Packing House Fertilizer.
No. 253. World of Good Raw Bone Super Phosphate.
No. 254. Fine Ground Bone.
No. 255. Chicago Bone Meal.
No. 256. Bone and Blood Animal Guano.

W D. Tyler, Wooster, O.

No. 284. High Grade. Special Wheat and Grass Guano.
No. 285. Farmers' Alkaline Bone.

Elias Uhrich, Uhrichsville, O.

No. 321. Pure Bone Meal.

The Virginia-Carolina Chemical Co., Richmond, Va.

No. 4. V. C. C. Co.'s Dissolved Bone and Potash.
No. 5. Eureka High Grade Bone Phosphate.
No. 44. Beef, Blood and Bone.
No. 141. V. C. C. Co.'s Slaughter House Bone.
No. 142. Genuine German Kainit.
No. 366. V. C. C. Co.'s Double Bone Phosphate.

George Wagner, Sandusky, O.

No. 391. Hercules.

The Walker Fertilizer Co., Clifton Springs, N. Y.

No. —. Walker's Excelsior Brand, Food for House Plants.

Walker, Stratman & Co., Pittsburg, Pa.

No. 139. Bone and Meat.
No. 205. Big Bonanza.
No. 206. Smoky City.
No. 207. Four Fold.
No. 208. Pure Raw Bone.
No. 317. Help Mate.
No. —. Potato Special.
No. —. Butchers' Bone Meal.

The Walton Fertilizer Co., Warren, O,

No. 138. German Truck and Potato Manure.
No. 174. Reliance Dissolved Bone.
No. 265. Diamond Cereala Soluble Bone.
No. 266. Special Dissolved Bone Phosphate.
No. 313. Diamond Bone Black and Potash.
No. 314. Ontario Fish Guano with Potash.
No. 105. Wheat and Grass Grower.
No. —. Pure Bone and Potash.

V. E. Wampler, Dayton, O.

No. 212. Wampler's Grain Grower.

The Western Union Chemical Co., Cleveland, O.

No. 31. Half and Half.
No. 32. International Phosphate.
No. 33. Ohio Farmers' Bone Super Phosphate.
No. 80. Union Fertilizer for Potatoes and Tobacco.
No. 81. Bull Dog Phosphate.
No. 199. Entire Bone Phosphate.
No. 200. Tiger Bone Meal.
No. 201. Improved Bone.

M. E. Wheeler & Co., Rutland, Vt.

No. 279. High Grade Electrical Dissolved Bone.
No. 320. High Grade Royal Wheat Grower.
No. —. High Grade Potato Manure.

M. E. Wheeler & Co., Rutland, Vt.—Continued.

No. —.	High Grade Corn Fertilizer.
No. —.	High Grade Fruit Fertilizer.
No. —.	High Grade Grass and Oats.
No. —.	High Grade Pure Ground Bone.

Wheeling Butchers' Association, Wheeling, W. Va.

No. 316.	Ohio Valley Bone Dust.

The Williams & Clark Fertilizer Co., New York, N. Y.

No. 123.	Prolific Crop Producer.
No. 124.	Royal Bone Phosphate.
No. 125.	Good Grower Potato Phosphate.
No. 231.	Carteret Bone Meal.
No. 232.	Acorn Acid Phosphate.
No. 233.	Plain Superphosphate.
No. 289.	Americus Pure Bone Meal.
No. 340.	Dissolved Bone and Potash.
No. —.	Universal Ammoniated Dissolved Bone.

The Zell Guano Co., Baltimore, Md.

No. 16.	Zell's Dissolved Bone Phosphate.
No. 102.	Zell's Special Compound for Potatoes, etc.
No. 103.	Zell's Calvert Guano.
No. 278.	Zell's Dissolved S. C. Phosphate.
No. 326.	Zell's Dissolved Bone Phosphate and Potash.
No. 327.	Zell's Pure Ground Raw Bone.
No. —.	Zell's Ammoniated Bone Superphosphate.
No. —.	Zell's Economizer.
No. —.	The Little Giant.

FERTILIZER LAW.

TO REGULATE THE MANUFACTURE AND SALE OF COMMERCIAL FERTILIZERS.

Section 4446*a*. [*How package containing commercial fertilizer to be marked.*] Any person or company who shall offer, sell or expose for sale in this state, any commercial fertilizer, shall affix to every package, in a conspicuous place on the outside thereof, a plainly printed certificate stating the number of net pounds in the package sold or offered for sale, the name or trade mark under which the article is sold, the name of the manufacturer and place of manufacture, and a chemical analysis stating the percentage of nitrogen, or its equivalent in ammonia, in an available form, of potash soluble in water, and of phosphoric acid, in an available form (soluble or reverted) as well as the total phosphoric acid.

Section 4446*b*. [*Person offering same for sale to deposit sample with Secretary State Board of Agriculture.*] Before any commercial fertilizer is sold or offered for sale, the manufacturer, importer, or party who causes it to be sold or offered for sale within the state of Ohio, shall file with the Secretary of the Ohio State Board of Agriculture, a certified copy of the certificate referred to in section 1 [4446*a*] of this act, and shall deposit with said Secretary, a sealed glass jar, containing not less than one pound of the fertilizer, accompanied with an affidavit that it is a fair average sample.

Section 4446*c*. [*Manufacturer, importer, or agent to pay license.*] The manufacturer, importer or agent of any commercial fertilizer, shall pay, annually, on or before the first day of May, a license fee of twenty dollars *on each brand*, for the privilege of selling or offering for sale within the state, said fee to be paid to the Secretary of the Ohio State Board of Agriculture; provided, that whenever the manufacturer or importer shall have paid the license fee herein required, for any person acting as agent for such manufacturer or importer, such agent shall not be required to pay the fee named in this section.

Section 4446*d*. [*Analysis to be made by Secretary State Board of Agriculture.*] All analyses of commercial fertilizers sold within the state shall be made by or under the direction of the Secretary of the Ohio State Board of Agriculture, and paid for out of the funds arising from license fees, as provided for in section 3 [4446*c*]. At least one analysis of each fertilizer sold shall be annually made.

Section 4446*e*. [*Secretary to publish, annually, report of analyses made and fees received.*] Said Secretary shall publish annually, a correct report of all analyses made and certificates filed, together with a statement of moneys received on account of license fees and expended for analyses, and any surplus arising from license permits shall be placed to the credit of the agricultural fund.

Section 4446*f*. [*Persons selling without complying with foregoing provisions, how punished.*] Any person or party who shall offer or expose for sale, or sell, any commercial fertilizer without complying with the provisions of sections 4446*a*, 4446*b* and 4446*c* of the Revised Statutes, or shall permit an analysis to be attached to any package of such fertilizer, stating that it contains a larger percentage of any one or more of the constituents named in said section 4446*a* than it really does contain, shall be subject to a penalty of not less than two hundred dollars for the first offense, and not less than five hundred dollars for every subsequent offense, to be recovered in a civil action, and the offender, in all cases, shall also be liable for damages sustained by the purchasers of such fertilizers; provided, however, that a deficiency of one per cent. of the nitrogen, potash or phosphoric acid claimed to be contained, shall not be considered as evidence of fraudulent intent.

Section 4446*g*. [*Where suits to recover penalties may be brought.*] Suit may be brought for the recovery of penalties under the provisions of this act in the court of common pleas of the county where the fertilizer was offered for sale, or sold, or where it was manufactured, and all penalties so recovered, shall be paid into the state treasury to the credit of the general revenue fund.

Section 4446*h*. [*Secretary of State Board of Agriculture may select samples to be analyzed.*] The Secretary of the Ohio State Board of Agriculture, or any person by him deputized, is hereby empowered to select from any package of commercial fertilizer exposed for sale in any county in Ohio, a quantity not exceeding two pounds, which quantity shall be for analysis to compare with sample deposited with said Secretary, as provided in section 2 [4446*b*] of this act, and with the printed certificate found on the given package found on sale.

Section 4446*i*. [*All suits under this act to be brought by Secretary State Board of Agriculture.*] All suits for the recovery of fines under the provisions of this act, shall be brought by the Secretary of the Ohio State Board of Agriculture, in the name of the state of Ohio.

Section 7002. [*Fine and imprisonment for violation of provisions of fertilizer law.*] Whoever sells, exposes for sale, or offers for sale any commercial fertilizer without having complied with the provisions of sections 4446*a*, 4446*b* and 4446*c* of the Revised Statutes shall be fined in any sum not exceeding two hundred dollars, or imprisoned not more than thirty days, or both, and said fine or imprisonment, or both, shall not be a bar to the recovery of the civil penalty provided for by sections 4446*f* and 4446*g* of the Revised Statutes.

PROCEEDINGS

OF THE

FIFTY-THIRD ANNUAL

Ohio State Agricultural Convention

Held in the Senate Chamber, State House, Columbus, Ohio, Thursday, January 13, 1898.

The Convention was called to order at 10 o'clock A. M. by J. T. Robinson, President of the Ohio State Board of Agriculture, who announced that the session would be opened with prayer by the Rev. C. L. Winget, of Columbus, Ohio.

Rev. C. L. Winget then invoked the Divine Blessing in the following words:

O Thou, our God, our Father, who art wonderful in all Thy ways, we approach Thy mercy seat with a full consciousness of all unworthiness and of our heart wanderings. But we come to Thee because Thou art Our Father and because Thou hast invited us to make our wants known before Thee. O Lord, Thou knowest the objects for which we are assembled. We come to Thee this morning asking Thy blessing upon this assembly, upon these, Thy sons, the tillers of the soil, who are working together with Thee in securing a rich abundance for the necessities of life. We pray Thee, Our Father, as this assembly is for deliberation and for discussion, that it will be helpful in the interests of agriculture. We pray Thee, that rich thought may give direction to wise counsel and that the fruits of its deliberation may be for Thy glory, as it shall be for our good and for the good of those who are to be helped by these deliberations. We thank Thee, our Heavenly Father that Thou hast given to us a goodly heritage; that Thou hast given to us pleasant places; that Thou hast given to us seed and seed time; that Thou hast given shower and sunshine; that thou hast given us power to work; and that Thou hast commanded us to go and work that we may reap the harvest that will come as a reward to labor. And we pray Thee, our Father, to bless the representative men of the agricultural districts of this great state and of this great country, so that they may be moved by Thy guiding hand in all that they do, and shall by wise counsel and careful consideration give such direction to affairs that the greatest good shall come to pass. Our Father, as we are here in Thy presence to do Thy will, we pray Thee to smile graciously upon us and direct us in all of our interests to the end that the place we occupy in the world shall be helpful to all around us. We thank Thee, Our Father, for the good that comes to us from the soil, from the sunshine and from shower and from being the recipients of the opportunities Thou hast given us. We pray Thee, our Father, that Thy blessing may not only rest upon those who are here but upon the interests that they represent; and we pray Thee that Thy blessing shall rest upon the chief executive of our great and beautiful and bountiful land. We pray Thee that it may rest upon the chief executive of this great commonwealth. Direct them, we pray thee, in their duties that the greatest good shall come to us from the benign influences of this great and free government. We pray Thee, our Father, that Thy blessing may come to each one of those present. So guide us and so direct us and so help us by Thy presence that all things shall work together for Thy glory as well as for our good. When life's battles are ended, when we have finished our course in life, when we have by faithfulness won favor with God, having fought a good fight, and having kept the faith, when our labor is done, then O Lord, gather us into the rewards of those who have lived next to Thee, we ask it all in Jesus' name, Amen.

President Robinson: Before proceeding with the call of counties and recording the names of delegates, I will appoint a committee to wait upon Governor Bushnell and escort him to the Senate Chamber. While the committee is performing that duty we will proceed with the regular business of the Convention. I will name as members of the committee to wait upon Governor Bushnell, Mr. Charles A. Ganson, of Champaign county, and Dr. A. L. Paul, of Putnam county. Awaiting return of the committee with Governor Bushnell, we will proceed with the call of counties and recording the names of delegates.

Secretary W. W. Miller, of the State Board of Agriculture, then called the roll of counties, the delegates responding and delivering the reports of their societies.

At the conclusion of the roll call, Governor Asa S. Bushnell was escorted to the President's chair and introduced by Mr. Robinson as follows:

Gentleman of the Convention, I have the pleasure of introducing to you at this time the Governor of our state who will welcome you to our midst. (Applause.)

Hon. Asa S. Bushnell then said: Mr. President and members of the State Agricultural Convention: In order that I might not keep you waiting I hurried up the stairs very rapidly. It has not left me with very much breath, but I will endeavor to welcome you as best I can. It is a great pleasure, I assure you, to appear before you today and bid you welcome to Columbus and to the State Capitol. This magnificent structure is your own. It belongs to the people of Ohio, and to none more than those representing the agricultural interests of the state. I have received welcome to many hearths throughout the state of Ohio during the last three or four years and now it is with peculiar pleasure that I return a hearty welcome to you and to say to you that the people of Ohio, and especially those in official life, are indebted greatly to the sturdy citizens who represent the agricultural interests of our state. From the time of my boyhood, when I was old enough to ride a horse for the man who plowed the corn, and, from the time I was large enough to drive the reaper, down to the present time, I have always had great respect for the tillers of the soil and for those men who represent that great industry. It is hardly necessary for me, in addressing an agricultural convention, to speak of the magnitude of your interests. We have a great agricultural state and among our many other diversified industries it is one of the most important. It is the foundation stone of the great structure of our government. (Applause.) You have assembled here representing the agricultural interests of Ohio and I am pleased to greet you and to welcome you. I trust that your meeting will be productive of great good and I know that what will be productive of great good to your interests will be productive of good to the interests of all. I shall not detain you any longer now as I know you have a full and interesting program prepared. I simply wish to repeat that it gives me great pleasure in welcoming you to the Capital City of our state. We are all glad to have you in our midst. Wishing you great prosperity during the coming year and the years to follow, I will bid you Godspeed. (Applause.)

Mr. J. T. Robinson, President of the State Board of Agriculture, then delivered the following address :

Gentlemen of the Convention:

The Ohio State Board of Agriculture has met in this, its fifty-third annual convention, to consult and deliberate as to the conditions and needs of the great industry of agriculture throughout the State.

By custom, it becomes my duty and privilege, as your presiding officer, to give you a brief summary of the work done by your Board during the year 1897.

The hope of returning prosperity to the farmers of Ohio seems about to be realized. With few exceptions the varied products of our State have yielded fair returns and this, with the general advance in prices and the revival in other industries, affords the most gratifying evidence that we are on the eve of almost universal prosperity. There is occasion to take an encouraging view of the future and to congratulate ourselves upon the success, during the year just closed, of that industry which lies at the foundation of national prosperity.

With all these evidences of prosperity, however, we may not hope to take that rank, among the producers of the world, to which we are entitled until we have exhausted all efforts to produce within our own borders, and as a result of our own industry, everything, now imported from other nations, which might be obtained from our own productive soil. Our wonderful diversity of climate, our many qualities of soil, the intelligence and push of our farming people, give us unparallelled opportunities for becoming a self-sustaining, prosperous and happy nation.

The investigations made by the national department of agriculture and the efforts it is making to establish and foster new industries deserve our cordial support and hearty cooperation. We are to be congratulated upon having such men as Secretary James Wilson and Assistant Secretary Joseph H. Brigham at the head of that department. They have demonstrated the fact that they are not only men of broad minds and extended knowledge, but men of action as well, and going directly from the farm to the department they remain in close touch with their fellow farmers throughout the country.

The Ohio farmer is to be congratulated upon many advantages possessed, that are not enjoyed by the farmers of many other states. First, is the importance of rural population. The last federal census shows that out of a total population of 3,672,316, 68.45 per cent. or over two-thirds are credited to the rural population, scattered over the 41,000 square miles of the state. What significance this should have, what influence it should wield in the affairs of the state, representing as it does the absolute, controlling power. The farmer stands in the same ratio with respect to paying the expenses of the state government. Is there, therefore, any good reason why his reasonable requests upon the state should not be respected? The institutions that guard and promote the interests of 68 per cent. of our citizenship should receive liberal attention on the part of our general assembly and the officers who administer the affairs of the state.

Ohio is phenomenally a state of diversified agriculture, exercising an influence in trade enjoyed by few other states and bringing to her markets all classes. The average value of her improved lands is $47.53 per acre, which is exceeded by only three other states, New York, $58.48; Massachusetts, $85.00; and New Jersey, $82.42.

The value of unincumbered farms in Ohio is $843,000,000, and the value of those that are incumbered is $206,000,000, the amount of incumbrance being about one-third the given value. These are deductions from the last census; the ensuing seven years, some of which have been trying to the farmer as well as to those engaged in other pursuits, have undoubtedly increased the amount of incumbrance and decreased the total values, but as all states have been affected alike, Ohio will still hold her high rank in the importance of her agriculture and the intelligence of her farmers. A million children are attending the schools of Ohio, and thousands of pupils are enrolled in the universities and colleges, which institutions are sustained in a great part by the 68 per cent. of rural population. The farmers' boys and girls are found in the colleges and universities, fitting themselves for the highest duties of life and the elevation of the profession of farming.

The following figures present the standing of some of the important northern states with respect to their farm values and farm incumbrances, subject, of course, to the same influences and changes that have affected Ohio since the census:

State.	Value of unincumbered farms.	Value of incumbered farms.	Per cent. of incumbrance on incumbered farms.
New York	$658,000,000	$309,000,000	43.63
Pennsylvania	740,000,000	181,000,000	40.65
Indiana	600,000,000	154,000,000	30.30
Illinois	977,000,000	285,000,000	34.63
Iowa	551,000,000	305,000,000	33.29
Michigan	357,000,000	198,000,000	32.38
Missouri	459,000,000	166,000,000	32.28
Nebraska	255,000,000	147,000,000	32.39
Minnesota	220,000,000	119,000,000	31.61
Ohio	843,000,000	206,000,000	34.29

As farmers we feel proud of Ohio and loyal to her institutions. Let our deliberations be such as shall tend to elevate the profession and improve the condition of each brother farmer, and in so doing benefit all other interests and industries and increase the importance of our commonwealth.

STATE FAIR.

I am proud to be able to say that the Ohio Fair and Industrial Exposition continues a leader, being stamped by press and public as an institution of superior merit, fitly and aptly portraying annually the progress of the state in her agriculture, her stock raising and her manufactures, inculcating the best ideas and stimulating improvement beneficial to the state and her citizenship. In the operation of the Ohio Fair, your Board has lent encouragement to every class of exhibits that possessed merit, promoting as far as possible the manufacturing interests and the introduction and use of the best breeds of the various classes of live stock, as well as the improved varieties of farm and orchard products. Your Board has discouraged the exhibition of that which was devoid of merit or that did not tend to promote improvement in some of the lines for which the Fair is established, and it has positively excluded from the grounds and buildings every objectionable feature and privilege in the way of schemes or side attractions that only deceive the people and from which nothing of value can be learned. It has been said, that a fair could not exist without side privilege attachments, from which considerable revenue is received, attractions on the order of fake and the "Midway." The Ohio Fair has for years proven to the contrary and maintains the reputation of being clean of all such, and throughout its entire management purely educational and hand in hand with all that increases intelligence and aids in building up the farm and manufacturing industries of the state.

The exhibition of 1897 was a magnificent success. Nearly ten thousand entries were presented, and every class to which the Fair is open was represented by a superior array of articles or animals. Producers, breeders and manufacturers came in direct contact with thousands of people, representing the best and most progressive elements of the state, and the lessons presented at the Fair have not fallen upon barren ground. Through the influence of the fairs numbers of noted blooded animals have been sent into different sections of the state to the betterment of stock of the purchasers and good and profitable results will follow, not simply this year, but in all the years to come. Manufacturers sold and disposed of hundreds of improved implements and machines, and the result is, not only encouragement to the manufacturers, but improved methods to the purchasers, and economic conveniences that must count to their profit in the outcome. At the Fair of 1897 there seemed to pervade an air of approval and prosperity that has not been so manifest for a number of years.

Nearly eighteen thousand dollars ($18,000) were offered in premiums and the competition was spirited in every department, showing, as nothing else can so forcibly show, the possibilities of Ohio in her various industries. The Fair is so rapidly increasing in proportions and the demand upon it becoming so great from the manufacturing and producing interests that it becomes a study of your Board, with the revenue coming in, to meet these increasing demands, demands that are warranted to keep Ohio in the front and make the annual exhibitions of value to the people and the state, rather than mere money making affairs.

CROP REPORTS.

The Department continues its work of reporting monthly the condition or prospect of crops and live stock, giving to the farming public the best and most reliable information as secured from a large corps of correspondents representing the various townships of the state. This work has been increased from year to year until now the Department not only presents from time to time the percentage comparison of the items reported upon, but it is able through its increased avenues of information and its system of arriving at results, to estimate area and product in acres and bushels of the principal crops of the state, for the seasons in which grown and within a few weeks after the harvest. The monthly reports are promptly sent to the farmer correspondents in every county of the state, to the agricultural and news press and to others who may be interested and apply.

FARMERS' INSTITUTES.

The great success of and increased demand for farmers' institutes, demonstrates the wisdom of the General Assembly of Ohio, in bringing them into operation under the present law. The institutes are fully appreciated by farmers as a means of education that strongly tends to improvement through all the avenues of agricultural production, and are an acknowledged benefit to all classes. In the assignments for the present season not a single county of the state is omitted, while in many counties the requests and demands are so great that as many as four, the full allowance of the law, are held under the auspices of your Board, and in addition two or more independents under the auspices of local enterprise.

Your Board has labored zealously to make the farmers' institutes of Ohio all that the law contemplated they should be made, and in the work has called to its aid, as lecturers and instructors, specialists of reputation and known ability, who are in the field for the best work possible to be done. The institutes involve a vast amount of work and correspondence by the Department and which has been increasing from year to year as the interest in institutes increased in the counties.

Ohio is foremost among all the states in the work of farmers' institutes, notwithstanding her means are much less than are provided by many other states. The Secretary has exercised the most economic management consistent with good work and the Board has thus been enabled to provide for the greatest possible number of meetings.

COMMERCIAL FERTILIZERS.

A most practical and protective work in the interest of the farmer and the honest manufacturer devolves upon the Secretary of your Board, in the matter of inspection and analysis of commercial fertilizers sold or offered for sale in this state. The methods adopted by the Secretary in carrying out the letter and spirit of the law are such as to give to the purchaser the most reliable information, enabling him to know from the careful analyses made and published of brands of fertilizers found on sale in the open market, that which he could not know or determine for himself by a mere examination of the goods. The result is that farmers need not be imposed upon in the purchase of fertilizers, but may secure, for the enriching of their lands and the feeding of crops, just the chemical ingredients they desire. Manufacturers who handle honest goods willingly comply with the law and the requirements of the Secretary in the enforcement of the same and their business is enhanced by so doing.

The fertilizer work has greatly increased since the enactment of the law in 1882, when only one hundred and six brands of goods were found upon the Ohio market. The increase has been from year to year until the last year five hundred and fifty brands were found upon the market.

The inspection and analysis entails a vast amount of careful labor on the part of the Secretary, but it is a most important work to the agricultural interests. I think the farmers of Ohio do not fully realize the vast amount of money that is saved to them in this one item.

I cannot speak too highly in praise of our Secretary, Captain Wells W. Miller, in this and in all other work connected with the Department. He has shown himself to be a man of unquestionable integrity and of rare executive ability, with courage and tact to surmount the difficulties common to his position, that are excelled by few, if any.

The many years that Mr. James W. Fleming has acted as our Assistant Secretary are in themselves his strongest praise. The skillful manner in which he has discharged his numerous duties, the careful, conscientious thought which he gives to all of his work are well known to you. We are most fortunate in having these able, upright men in charge of this Department.

At the conclusion of the President's Annual Address, Mr. J. C. Bower, Treasurer of the State Board of Agriculture, read his report, as follows :

ANNUAL STATEMENT

Showing the financial transactions of the Ohio State Board of Agriculture, for the fiscal year ending December 1, 1897, and including the full month of December, in order to hereafter make the fiscal year of twelve months the same as the calendar year, from January 1, to January 1.

The following statement is summarized from the several accounts as itemized in the Journal and Ledger for the time indicated above, and is a correct and complete showing. The statement also presents the general financial condition of the Board.

Receipts, other than state appropriations, are charged directly to the Treasurer. Receipts from state appropriations are charged to the respective appropriation accounts. All disbursements have been by checks or orders, properly signed by the President and Secretary, and the items for which issued, detailed in the Journal and carried to the proper Ledger accounts.

The statement shows the balance in the several funds at the beginning of the year, and the amounts remaining at the close of the present accounts, making a complete summary of all financial transactions.

Respectfully submitted,

J. C. Bower,
Treasurer.

RECEIPTS.

FROM STATE APPROPRIATIONS.

BALANCES FROM LAST YEAR.

In fund for encouragement of Agriculture	$1,514 20	
In fund for Contingent Expenses	52 43	
In fund for Crop and Stock Service	310 30	
In fund for payment of Bonds and Interest	7,100 00	
		$8,976 93

APPROPRIATIONS FOR 1897 AND FIRST QUARTER OF 1898.

For the encouragement of Agriculture	$6,500 00	
For Contingent Expenses	1,500 00	
For Crop and Stock Service	1,800 00	
For furniture and repairs	400 00	
		$10,200 00
Total from State Appropriations		$19,176 93

MISCELLANEOUS RECEIPTS CHARGED TO TREASURER.

Balance in hands of Treasurer at close of last year	$630 69
From Farmers' Institute per capita collections	8,170 90
From fertilizer licenses	11,322 20
From borrowed on the Board's note	9,000 00
From State appropriation to reimburse for office furniture and repairs, paid	400 00
From sale of hay	265 95
From sale of horse and collar	39 50
From stall rents	71 50
From loan of chairs	10 00
From V. D. Craig, on guarantee	30 00

From rent of house on grounds	$60 00	
From special premium offer	100 00	
From borrowed on Board's note of October 18	1,500 00	
From borrowed on Board's note of December 6	1,000 00	
Total miscellaneous		$32,600 74

PROCEEDS OF STATE FAIR.

From sale of full admission tickets	$20,228 50	
From sale of children's half tickets	327 75	
From sale of special tickets	182 00	
From sale of grand stand tickets	1,849 50	
From sale of exhibitors' and wagon tickets	610 00	
From entrance fees (speed)	2,525 00	
From entrance fees (class)	1,235 30	
From sale of privileges	3,281 53	
From Woman's Department	22 00	
From returned from Horse Department	100 00	
From American Trotting Association, collection	7 90	
Total State Fair		$30,369 48
Grand total receipts from all sources		$82,147 15

DISBURSEMENTS.

MISCELLANEOUS ACCOUNTS.

For old outstanding checks redeemed	$99 60	
General expense of members	1,871 12	
Express and freight	223 19	
Farmers' Institute expense	6,548 72	
Fertilizer inspection and analyses	5,157 45	
General labor and assistance	150 56	
General supplies	1,720 40	
Interest on notes	511 84	
Note redemption	19,000 00	
Office expense	392 38	
Salary of Superintendent of Fair Grounds	487 50	
Postage and telegraph	962 62	
Bond redemption	5,000 00	
Interest on bonds	1,500 00	
Salary of Secretary	2,708 32	
Salary of Assistant Secretary	2,275 00	
Salary of Stenographic Clerk	975 00	
Salary of Messenger Clerk	780 00	
Crop and Stock Service	1,917 80	
Total miscellaneous		$52,281 50

STATE FAIR EXPENSES.

Expense of Horse Department	$464 05
Expense of Cattle Department	90 45
Expense of Sheep Department	76 90
Expense of Swine and Poultry Departments	252 14

Expense of Machinery Department	$539 78	
Expense of Mechanics' and Merchants' Departments	88 45	
Fxpense of Woman's Department	515 67	
Expense of Farm Product and Fruit Departments	186 10	
Expense of Secretary's Department	355 50	
Expense of Treasurer's Department	476 55	
For premiums	14,232 55	
For printing and advertising	3,303 40	
For refund entrance	17 55	
For labor and assistance	1,416 50	
For material and supplies	1,685 77	
For expense of members	274 05	
For meals	294 40	
For Fair Ground improvements and repairs	4,157 57	
Total State Fair		$28,427 38
Total disbursements on all accounts, as per checks and orders issued		80,708 88
Deduct from total checks and orders issued, the outstanding unpaid checks of present year	$1,288 50	
And there is shown actual disbursements from all funds..		$79,420 38
Deducting the actual disbursements from the total receipts from all sources, shows a balance cash on hand, all funds, of		2,726 77
This balance consists of cash in hands of treasurer at the Hayden National Bank	$679 24	

IN STATE APPROPRIATIONS.

For encouragement of agriculture	$1,032 48
For Contingent Expenses	222 55
For Crop and Stock Service	192 50
For Bonds and Interest	600 00
	$2,726 77

LIABILITIES.

The liabilities of the Board are for first mortgage bonds outstanding	$20,000 00	
Notes of the Board	2,500 00	
Outstanding unpaid checks of present and former years...	1,637 70	
Total liabilities		$24,137 70

PROPERTY VALUE.

State Fair grounds, buildings and improvements, figured at cost up to the close of last year	$295,991 19	
Improvements made during the year 1897	4,157 57	
Total cost value		$300,148 76
The cost value of grounds and improvements being in excess of liabilities		276,011 06

At the conclusion of the Treasurer's Report, Mr. C. Bordwell submitted the report of the Auditing Committe, as follows:

Ohio State Board of Agriculture.

GENTLEMEN: The undersigned committee, appointed to examine and audit the financial accounts of the Board, beg leave to report, that we have had before us all the books, vouchers, checks and orders, connected with the financial transactions, and have given the same a careful examination, by comparing each item in the Journal with the voucher corresponding and the check or order issued in payment. We find the accounts correct, the receipts and disbursements as set forth and all expenditures properly authorized. The Ledger shows the distribution of accounts and balances correctly with the Journal entries.

The intelligent, plain and neat manner in which the accounts have been conducted, enabled your Committee to properly analyze and clearly understand them and we would especially commend this part of the work.

The financial statement recorded at the close of the Journal accounts, and presented in the Treasurer's report, is a most thorough and complete summary of the financial transactions, making it unnecessary to reiterate the figures in this report.

Respectfully submitted,

C. BORDWELL,
G. LIGGETT,
A. J. CLARK,
Auditing Committe.

President Robinson: I will now announce the committees:

On Resolutions—Mr. A. H. Kling, Marion county; Mr. J. G. Russell, Morrow county; Mr. B. Beall, Crawford county.

On Credentials—Hon. J. L. Carpenter, Meigs county; Mr. W. J. Smith, Sandusky county; Mr. V. L. Sampson, Hamilton county.

Secretary Miller: We have with us today Prof. T. C. Atkeson, who is President of the State Board of Agriculture and Dean of the College of Agriculture of West Virginia. We will not have time to hear from him this forenoon, but this afternoon you may all expect an address from him. (Applause.)

I would suggest to any one having resolutions to present to this Convention, that he present them to the Committee on Resolutions as early as possible.

Assistant Secretary Fleming then announced to the Convention the time and place of meeting of the committees above appointed, requesting all persons having resolutions to offer to submit them as early as possible to the committee.

President Robinson: The next thing in order will be nominations for members of the State Board of Agriculture. There are five members to be elected.

Col. J. H. Brigham, Assistant Secretary of the United States Department of Agriculture: Mr. President, the duties of members of the State Board of Agriculture are very important. Members of that Board can render great service to the agricultural interests of the state. I believe that members of the Board should have practical knowledge and should be familiar with all the interests of agriculture in the state. I desire to present for your consideration the name of a gentleman not unknown to most of you, a man who has had experience upon the Board; a man who most of us know personally; a man who has been successful in every undertaking of life, and I believe that if he should be continued for another term upon the State Board of Agriculture he will render even more important services to these great interests than he has heretofore rendered. I nominate for this position, or for one of these positions, on the State Board of Agriculture, Hon. L. G. Ely, of Fulton county.

Hon. J. L. Carpenter, Meigs county: I want to inquire whether or not it will be necessary to designate the length of term of office to which each candidate is being nominated? As I understand, we are now working under the new law which provides for various terms of office of the members elected, and it occurs to me that confusion might arise if there is not some designation as to the length of the term of office for which each of the candidates is elected. There may be some rule by which, after the election of these men, they can cast lots. If there is any plan to be adopted which will determine the term of office for the five elected, I wish the Secretary or the President would state it.

Secretary W. W. Miller: Mr. President, the Senator has mentioned a subject that has been presented to me very many times. I have a theory but I have no power to act or to speak. However, my theory is that this Convention should control the matter. You who are voting members of this Convention can make such rules and regulations as to you may seem most just and proper. The one I would suggest would be that when we come to the election, some member who is authorized to speak, put a motion something like this: that we now proceed to the election of five members of the State Board of Agriculture, and that a majority of all votes cast shall be necessary to a choice; that he who receives the largest majority shall be declared elected for four years; that the two gentlemen who receive the next largest majorities shall be declared elected for the term of three years, and that those two receiving the next largest majorities shall be declared elected for the term of two years. This is simply my idea; I believe it is entirely fair, and I believe that this Convention is entirely competent to solve the matter and let the votes determine who shall be entitled to the long term.

Senator Carpenter: As I understand the Secretary, his proposition would simply be that in the first place it requires a majority of all votes cast, to elect; and in the second place, the candidate elected and receiving the highest number of votes shall be declared elected for the longest term, and the two receiving the next highest number of votes shall be declared elected for the next longest term, and the two receiving the next highest number of votes shall be declared elected for the short term. Now, Mr. President, in order to get it before the Convention properly, I move that this be adopted. It might as well be settled now as at any other time. (Motion seconded.)

Secretary Miller: Of course it is understood that no member can be elected who does not receive a majority of all the votes cast, and those five receiving the highest number of votes are to be declared the five members elected. But there must be a majority of all votes cast to elect members of the Board.

Mr. W. N. Cowden, Quaker City: Mr. President, suppose two or more have an equal number of votes when there is only one to be elected, how then are we to determine who is entitled to the office? Suppose that three have an equal number of votes and have a majority of all the votes cast, then how will you settle that matter? When there are two to elect it is possible that there may be an equal number of votes. It is not probable, but it is possible and when that contingency arises how are we to settle it? Now, I think, would be the best time to settle and I would suggest that it be settled by lot.

Secretary Miller: That would be entirely satisfactory.

Senator Carpenter: I accept that as an amendment to my motion.

The motion above made and duly seconded was then unanimously adopted.

Mr. R. H. Wallace, of Chillicothe: Col. Brigham relieved me from the greater portion of my speech. I concur in all that he said about the necessity of practical farmers upon the State Board of Agriculture and of men thoroughly acquainted with the system of running agricultural affairs. I rise to nominate a man for continuation on this Board who has been identified with the affairs of his county and his section of the state almost from his boyhood; a man who is thoroughly acquainted with and thoroughly identified with the farming interests of the great Scioto Valley; a man who has served on your Board with distinction; a man who has given, I think, very great satisfaction in his work to the other members and in the performance of his duties as a member of the State Board. I, therefore, rise to announce the name for re-election of Hon. H. S. Grimes, of Scioto county.

Mr. J. F. Greene, Sandusky county: I wish to endorse the good things said by my predecessors and to say that I rise for the purpose of nominating a man whom we all know in the northern part of our state, and who, indeed, is known by the farmers of the whole state as being closely identified, throughout his entire life and at the present time, with the agricultural interests of our state. He has served faithfully and well as a member of the State Board of Agriculture; his hand has been at the helm with other members of the Board in carrying the agricultural ship through the shoals of financial depression in the past and his experience and valuable services, I believe, should be commended and endorsed by re-election. I, therefore, take pleasure in presenting to this convention for its favorable consideration the name of Hon. J. T. Robinson, of Seneca county.

Mr. E. W. Porter: Mr. President and gentlemen of the Convention, I take great pleasure in submitting for your favorable consideration the name of a candidate for the State Board of Agriculture who is eminently qualified in every particular for the position to which he aspires. He is a practical and successful farmer and works with his hands; he is so well thought of in his own county that he has been for twelve years continued as a member of the county board of agriculture and during four years of that time has been its president and could have been its president a great deal longer if he had wanted to be. He is a man who has already served some time upon the State Board of Agriculture and for all of these reasons it gives me pleasure to submit for your favorable consideration the name of Gideon Liggett, of Union county.

Dr. W. I. Chamberlain, Summit county: I rise to nominate Albert Hale, of Summit county. I do so for three reasons. The first I will call a geographical reason; the second reason is personal fitness, and the third reason, the precedent of this Board almost invariably adhered to. First, let me present the geographical reason. It is a principle in all representative bodies covering any territory that the territory itself should be fairly represented. I tried to get a map of the state of Ohio, but you are all so familiar with it that this little sketch which I have made and will hold up before you now will show the exact location in this state of the different members. You will see here is a bird's eye view of the state of Ohio. I have drawn lines to divide it into four quarters geographically. In the northeastern quarter in which I live, Mr. Hale is the only representative. That quarter represents and includes the principal dairy interests of the state; the principal fruit interests for the state aside from the section around Sandusky and the section in southeastern Ohio; the principal manufacturing interests aside from the Springfield and Dayton section. There is more fruit, more dairying and more manufacturing in that great northeastern quarter than in any other quarter of the state of Ohio. It has only one representative, as you see by the black mark that I have put upon it. The southeastern part is almost as barren, having only one for that quarter. The northwestern part has four representatives, as shown by this map, and the southwestern part has also four representatives, on the present Board, as shown here. We claim with confidence that Mr. Hale should be re-elected because of this important geographical reason. This map, when I had drawn it, immediately suggested to my mind the story of President Lincoln when some politicians came from western Delaware to impress their great importance upon the mind of the President. He said: "Gentlemen, arn't you almost afraid for all of you to leave the state at once? I understand that you are all from western Delaware." They said: "Why, no, Mr. President, why should we be afraid?" He said: "Arn't you afraid while you are all gone that the state might tip up into the Atlantic Ocean!" My friends, without any joking, this case is almost as strong as that. We have only one man for that whole quarter of the state and we claim he should be re-elected. We claim it also on the ground of personal fitness. Mr. Hale is a farmer, an agriculturist and a nurseryman. He has been successful in whatever he has undertaken. He works with his own hands; he has been for fifteen years a member of the County Fair Board of his (Summit) county, and for eight years its successful Secretary; he is Secretary of one of the three most successful fairs in the state of Ohio; we claim it then on the ground of personal fitness and the success which has attended his management of the Horticultural Department. I claim it finally in accordance with the precedent of your Board that faithful, successful service has always been recognized without exception, I believe, by electing a man for the second term on the State Board of Agriculture. That is a wise rule. The first term serves to make one fitted to do the best work, and the second and third, if you please, give the benefit of his past experience and he is thus enabled to render much more valuable aid. I think under the new law it makes this precedent of which I have just spoken still more prominent and emphasizes its wisdom. On the Board of Trustees of the State University one member is nominated each year to serve for seven years and it gives that Board the degree of permanence and steadfastness and steadiness of work without which there can be no real success. I ask for the election, therefore, of my friend Albert Hale, of Summit county, because of geographical location and personal fitness, and because of the uniform custom of your Board.

Mr. R. Baker, Lorain county: According to Dr. Chamberlain's map there seems to be quite a vacancy in the north-central part of the state. I therefore rise to nominate a man who is prominently identified with our agricultural interests. He has a large farm. He is also running a cheese factory on his own responsibility. He is a man whom a good many of you know; he is a man who has been in touch with the State Board of Agriculture for many years. He is a faithful worker in his own county in promoting agricultural interests and if he should be elected to the State Board of Agriculture, I am sure no one would be able to render better service. I will not pretend to make an elaborate speech in connection with this nomination, but I present for your favorable consideration and to fill the vacancy in the north-central portion of your state the name of B. B. Herrick, of Lorain county.

Mr. Gregg: I desire to second the nomination of Hon. L. G. Ely, of Fulton county. Having a very favorable acquaintance with him and knowing him to be a man thoroughly qualified and eminently fitted for the position to which he aspires, I take great pleasure in seconding his nomination. Being so closely connected with farming interests, being so closely identified with the agricultural interests of the state, even to the law making department of our state government, we desire that he be continued as a member of this Board.

Hon. Henri Melber: As member from Seneca county in the lower House, I appear upon this floor to second the nomination of J. T. Robinson, of our county. In every sense that goes to make up a man, he stands without a superior in the great agricultural county of Seneca. I have known him nearly all my life. Though we differ politically, let me assure you that his selection will be no mistake. It may seem ill-timed and out of place for me to appear here in this capacity. Let me assure you, however, that I was reared upon a farm, though my vocation to-day is not that of following the plow. While I am not the owner of broad acres, I am the manager of three different farms for different parties, and I feel a deep concern and interest in the proper selection of suitable men for this important position. I therefore second the nomination of J. T. Robinson, of Seneca county.

Mr. C. G. Williams: There are a great many excellent men in Ohio, it seems. I rise to nominate one known, I think, to every farmer in the state; known for his services in the interests of agriculture; known by all of us. It is not necessary to say anything further. I nominate Mr.S.H. Ellis, of Warren county.

Senator J. L. Carpenter, of Meigs county: I think the map presented by Dr. Chamberlain was very suggestive. In naming his candidate, he showed that northeastern Ohio had but one representative. The same is true of southeastern Ohio, and all that he said of the fitness of his man applies surely to the present member of the State Board from southeastern Ohio, and I take great pleasure in seconding the nomination of Mr. Grimes, of Scioto county.

T. C. Laylin, Huron county: As a representative of the farming community in which he lives, I have the distinction and honor today of presenting the name of Albert C. Williams, of Huron county, for your favorable consideration. Huron is one of those counties in which great wealth of production exists and whose wealth is not only production of grain, but of intelligence. I have the honor to nominate Albert C. Williams, of Huron county, for a member of the State Board of Agriculture. Mr. Williams is an able man, honest and industrious, possessed of good judgment and executive ability. He has been twice honored by the people of his county with the important position of County Commissioner, an honor which no other citizen has ever had in that county. I therefore bespeak for him your favorable consideration.

Mr. W. N. Cowden, Quaker City: I was very much impressed with the map that Dr. Chamberlain held up for your inspection. I certainly commiserate them in that part of the state for the danger they are in of tipping over into Lake Erie, but I think we have a remedy. I want to second the nomination of a man who is a man of influence; who is a man of weight and will prevent any disaster of the kind suggested by Dr. Chamberlain. I want to second the nomination of Gideon Liggett, of Union county. I do it for two or three reasons. One is that he is especially the representative of the wool growing interests of the state in the State Board of Agriculture. He has been our representative there during several of the past years and he has been an acceptable representative to the wool growers. I think, without a single dissenting voice, the wool growers of Ohio ask that he should be continued as a member of this Board. I therefore take great pleasure in seconding the nomination of Mr. Liggett, and if he is elected I am sure that this disaster, which Dr. Chamberlain fears, will not occur.

Mr. W. W. Farnsworth, of Lucas county: As one of the representatives of the agricultural interests of this state, and as one of the exhibitors at your state fairs,—having known Mr. Hale over twenty years, in the capacity of an exhibitor, and having met him at various institutes and organizations throughout the state, and having had the pleasure of exibiting in his department at fairs, and realizing the efficiency, energy, courtesy and uprightness shown by him in his connection with exhibitors,—I rise to second the nomination of Albert Hale, of Summit county, and I hope and trust that he may be retained in the position he has so ably and faithfully filled with such eminent success and gratification to those who have come in contact with him.

There being no further nominations a recess was then taken until 2 P. M.

AFTERNOON SESSION.

THURSDAY, January 13, 1898.

After calling the Convention to order, President Robinson said: Gentlemen, we will now listen to an address by Dr. I. P. Roberts, of Cornell University, Ithaca, New York, on the subject, "Cattle, as Affected by the Food They Eat."

Prof. I. P. Roberts, of Cornell University, addressed the Convention as follows:

Mr. Chairman and Gentlemen of the Convention:

I regret very much that, after having received an invitation to speak to this honorable body, I am not better prepared. I have not had time to write out in logical and consecutive sentences what I would like to say to you, but I must do the best that I can under the circumstances.

I come to you today to talk of the effect of foods. As I look over the herds of shorthorns in this state and in my own state, I find that there are some good animals and some bad ones—some very bad ones—but, worst of all, bad animals have a very long pedigree that reaches away back into old England and sometimes deceives both the buyer and the seller. As I look at these animals, I see there a product of food that first grew along the river Tees in England. They could not have produced such an animal in the Channel Islands. I step over into Holland, to those old lakes reclaimed from the ocean, and I find another type of animal, the Holstein. The Holstein cow could not have been produced in the island by the sea. She is the product of her environment and of the food she ate and the water she drank.

Only a few days ago I addressed an audience in Connecticut. To-day I am in Ohio and how different the people look from what they did in New England. See the stalwart forms of erect, rugged men. I could but admire the Assistant Secretary of Agriculure, as he stood up last night and addressed the people on the college campus. He is a product of your food and soil. Other things, however, enter into the problem. Your schools, habits, customs, conditions, and a thousand other things have entered into it, but largely he stands as a product of your food and soil.

Let me go a little further. I go over into Germany and I find there cattle that have not sufficient bone; weak boned animals, so that the live stock and cattle industry is at a very low ebb. Why? Because the hay that those animals are fed upon contains only 44 per cent. of ash, while good hay contains 71 per cent. I find that in this hay there is but a little over 2 per cent of phosphoric acid, but in good hay there is nearly 5 per cent. of phosphoric acid in the ash. I go down to Lexington, Kentucky, where I was recently called, and I find the people of a little city there—not nearly so large as this city—selling two million dollars worth of farm horses per year. What does it mean? What does it mean?

It has been recorded of Henry Clay, when he kept racing horses and went over into Mississippi and adjoining states to attend the races, that he took the hay and oats from his home farm with him, because, he said, as soon as he commenced feeding the hay and oats raised in the adjoining states, his horses became less fitted for the work designed for them. They were not properly nourished by such food. What next do I find? That an experiment station was located at Lexington, Kentucky, not many years ago, and the chemist went out and found that the rocks and bluffs were rough and corrugated. He broke off some of the pieces of rock that were sticking out and analyzed them. What did he find? Forty-five per cent. of phosphoric acid. To-day if a New Yorker wants a real good saddle horse, or a good coach horse, he gets it from Kentucky. Why? Because of the soil very largely; a poor soil cannot raise a good plant; an unbalanced soil cannot raise a balanced plant and an an unbalanced plant does not produce a balanced grain. We have laid great stress on the presence of albuminoids, of carbo-hydrates and of fats in food. We have now come to learn that the phosphate of lime, or the mineral matter in the food, plays a very important part. I undertake to say that you tell me the food of a people or a nation any where on the globe, and I will indicate, with a very great degree of accuracy, the stage of civilization to which that people have arrived. Why, how can it be otherwise? We are sustained by the food we eat and this living organism, this brain power, this muscular power, is due to what we put in our stomachs. After generations have passed, this becomes fixed and inherited and is transmitted.

Now, what shall we do in Ohio and in New York, in regard to the feeding of our domestic animals? What is the problem that is before us? Let us see how far we have solved this problem? As I look over the live stock of the United States, I find that we are still breeding—what? English shorthorns, Netherland Holsteins, Jersey cows and English sheep. And what have we done? We have produced two breeds of swine in this country. Where and how were they produced? Two breeds that excel, I undertake to say. While saying nothing derogatory of other breeds, yet we have produced two breeds that stand out prominently. The one breed forming a large portion of the swine raised in the eastern states and the other forming nine-tenths of all the stock that is shipped into the Chicago market. Poland Chinas and Chester Whites. Both are American breeds. How did they become such breeds? Why is it that every car load of pigs that goes down the New York Central Railroad through our city—every car load of pigs is marked indelibly as being either full bloods or grades of the Poland China. There may be better hogs; there are better breeds for certain localities, but this shows the opinion of the man who must pack twenty bushels of corn into a pork barrel in order to get it to the market cheaper.

The Chester White pig originated in Chester county, Pennsylvania, where food was good and abundant. Where the soil was filled with plant food, including mineral matter. And so with the Poland China also. You have the honor, I think, largely, of originating that breed. I will call on Dr. Chamberlain to correct me if I am not accurate in that statement. The food played an important part with the Poland China hog. He was a coarse fellow and some specimens are coarse to-day, but by constantly nourishing him and feeding him and developing those parts which were of the most value, and breeding down those parts which were of the least value the present Poland China hog has been developed and is a distinctively American breed.

Take the Merino sheep from Spain—a very common sheep. He was brought on to the rich pastures of Vermont, pastures which were capable of producing food with plenty of mineral matter in it, a well balanced grass—what we sometimes characterize a rich, nutritious grass,—and the result is the best fine wool sheep, known as the American Merino. There is no more Spanish Merino. It is an American product and it came from the food. There was, of course, added environment and better conditions, but the food played an important part. In my travel through your country, taking a parlor car and looking over the people as one will see them passing along, I could not help but notice that they were a well fed people. That means a good deal; men who have an abundance of well cooked, well balanced and nourishing food; men who are able to endure, not eight hours' work, but eighteen hours' work, if it is necessary, and repeat it the next eighteen hours, as I understand some of you have been doing here recently.

Take the American trotter. Is there any horse compared with the American trotter? Where did he originate? On the best soils in the United States.. Go where you will and you will see the American trotter which you will find has been raised on good soil, or you will find that the food has been raised on good soil and brought to the horse's stable. At the experiment station we farmers ought to learn something without having it dinned into our ears year after year. At your experiment station they fed some pigs and for every seventy pounds of corn, when the pigs were fed under adverse conditions, they received four pounds additional weight; but when the environment was changed so that the food could perform its full office and function, whenever the animals were made comfortable and they were placed at the best advantage, for every seventy pounds of corn, they got an increase of nine pounds in weight.

Now, while talking of the effect of food upon animals, I do not want to be understood that I do not lay great stress upon food, but what I do want to emphasize is, that when we have given proper food, then we must make the environments so that the food can perform its full functions. The food is the fuel; the power that builds; the power that sustains; the power that energizes; the power that in the human family, when continued through generation after generation on your Ohio farms, has made presidents. Why, you cannot civilize a people until you feed them properly, and today the work of the farmer lies in one direction, largely, and that is better food. I wish I had picked up some apples on your streets to illustrate this thought. I often do go up and down the street and pick up apples, taking one that has been raised in the sunlight at the topmost branch, all colored up, full, overflowing with nutrition, overflowing with volatile oil, so full of those oils that help you to digest, that you instinctively carry it to your nose before you do to your mouth. Then I will take another one off of a tree—a half-fed, half-starved tree—from the lowermost branches, and what will you do? You will never eat the second one if you manage to get through with the first one. Those people who have become well fixed in life and who have accumulated capital, want good food. It is not quantity that they want, but it is quality. There is a little fraction of the population that is behindhand and that still demands quantity and pays but little attention to quality. But what a large majority of American citizens ask you farmers to do is to give them better quality. You cannot get better quality until you get better plants, either in the animal or vegetable kingdom. Then, primarily, the success of agriculture, the success of all of these vast industries with which we have to do, lies in the soil. When our cows at Cornell University in the earlier days showed a tendency toward abortion, we fed them what? Bone earth. Ground bone earth, by direction of the veterinarian, among other things. Our pastures were old; they had been robbed of the mineral matter in the soil. The plants were not well developed; were not normal, or at least were not at their best. The next year we fed the bone earth to the pasture and we have had no trouble since. I would not be misunderstood, either, in this regard, there are many other factors, such as good judgment, in feeding. Not only a good quality of food, but the right amount of food and the right amount of exercise and the right amount of air and all of these matters which enter generously into the solution of this problem. Now, what do we want to do with food when fed to our domestic animals? We want to produce variations. Some of you breeders, I presume, will not quite agree with me. I hope you will not all agree with me. That may sound new. I never want a calf or a pig just the duplicate of its ancestor. I want to produce a variation and that variation I want to be for the better. I want similarity, but never a duplicate. And how are you to get animals to vary? How do we get plants to vary? At our station we find that we can make plants take on very many new forms by food; just by feeding them. My friend to my right informs me that he is doing, in a marked way, the same thing. It may be done by the use of food and water. Water is only the vehicle which carries the food into and through the circulation. That is all it is. We have some Jersey cows that are not nearly so good as I would like, but I am trying to make them vary all the time by the food given them. Sometimes I miss it; my skill is not quite sufficient, my judgment is not quite good enough and I often have to compete with a long inheritance that overtops me and so while I make some variations for the better I sometimes make them for the worse. Then what? It is an old story that we improve by selection. We do not do any such thing. Selections never did anything towards improvement. Selection takes advantage of what has been done and enables the stock raiser to go on more rapidly than if he did not select. That is all it does; and he is very unwise who does not weed out the poor animals in order that he may make the variations for the better more rapidly than if he left the poor animals alone. Now, what I want to ask you farmers of Ohio to do is to improve your opportunities in this respect. This great state can produce presidents, but can you produce a half a dozen varieties of sheep that shall exceed in general and in some particular points any variety of sheep that has ever been raised? Will you always hang on to the old breeds, or will you take what is good of them and construct an animal that is better? Some say, "No matter how long the pedigree," and yet it does matter, because the longer this improvement has been coming down, which has come down from the effect of food and care, the stronger the animal is. That is all there is of it. The stronger it is. The longer the animals have been made to vary for the better by the use of food and improved environment the stronger is the blood and so in that sense a long pedigree is of advantage, but in no other sense.

I wonder if you will stop importing draft horses to Ohio, if you find it is time that you did, and gather up the good blood that is in Ohio, and by proper feeding, and of course proper selection, form a breed of Ohio horses? What is to hinder it? But take what is good. Do not ignore the past. Do not discard the work of a generation, but take what is good and make a better horse than any you have. You have made a better sheep. We have a finer sheep than anybody else in the world, so far as I know. Cannot you do the same with horses? Are their feet too soft for draft horses? Then breed hard feet on them. You can do it if you work along the lines suggested, but you cannot get the right food until you get down to the soil and get the right kind of soil. Now, we have made soils to all intents and purposes artificially. If you haven't enough phosphoric acid in your soil, then put it in. If you haven't enough mineral matter, then put that in. Take the analysis of two plants as we have done over and over again, raised on different soils, and see how they vary. Notice particularly the variation. It may not be so great as these figures I have given you here—more than half—but 20 and 30 per cent. is not uncommon. Which is the better? A well balanced, a strong, hard boned animal, like the Kentucky race horse that seems like a piece of beaten steel, that seems capable of standing anything, or a soft, punky bone. My friend to the right has informed me that the English people always go to Ireland to get their hunting horses. Why? Because the bone is so much better, and stands the terrific work of hunting. I think I could tell certainly from that fact that the soil of these localities in Ireland, where these wonderful horses are produced, which England has to draw upon, is richer in mineral matter, and as I look over this audience and see these great, stalwart men, I know that Ohio soil is rich in minerals. You cannot make a big man and a strong man with a good head on him unless you have plenty of bone to attach the muscles to, and so I say, here in this state, it gives evidence of great possibilities in the future. Here is the place, more than in New York, where new breeds of dairy cattle, new breeds of horses, new breeds of beef animals, if you still want to raise them, should be developed. As I said yesterday, hold on to all that is good and discard all that is not good and then engraft on to that which you have retained the qualities which you seek by proper food and environment. You have a great University up here. You have made a wonderful start. It is a magnificent institution. There the young men of the state are to be trained who are to go back to the farm and produce these improvements and changes about which we have been speaking. They are to produce them largely by the exercise of good judgment in the use of the food which they give to their domestic animals.

I thank you, gentlemen, for your kind attention. I have spoken, I believe, as fully as the time which has been allotted to me will permit. (Applause.)

At the conclusion of Dr. Roberts' remarks, President Robinson said:

This subject, so ably handled, is now before the Convention for discussion. If there are any questions to ask, Dr. Roberts, I am sure, will be glad to answer them.

The next address upon the printed program is by Dr. W. H. Wiley, on the subject "The Sugar Beet Industry."

Dr. W. H. Wiley, U. S. Department of Agriculture, Washington, D. C., then delivered the following address on

THE SUGAR BEET INDUSTRY.

A person with botanical and agricultural tastes, strolling along the European shores of the Mediterranean and Adriatic seas about the time the Phoenicians were teaching the Greeks their alphabet, would have observed a plant growing wild, with full, spreading leaves, and a bulbous root. Had this person understood the Latin language, he would have called this plant *beta*, and, in addition to this, had he been a botanist, would have called it *Beta vulgaris.*

This plant, indigenous to the Mediterranean coast, has, by subsequent cultivation, become, first, the garden beet, furnishing food for man and beast, and, finally, the sugar beet, containing in its structure the largest percentage of sugar of any known plant. In its primitive state the root of the beet contained only 3 per cent or 4 per cent. of sugar. As cultivated in our gardens, this percentage rose to from 4 per cent. to 6 per cent. Nearly one hundred and fifty years ago, a German chemist, Margraff, showed that the sweet taste of the garden beet was due to a saccharin principle which was identical with the sugar of the sugar cane. Some fifty years later a chemist by the name of Achard demonstrated the fact that sugar could be extracted in considerable quantities from this plant. A few years later, during the time of the Continental blockade arising from the Napoleonic wars, the Emperor Napoleon determined to supply the deficiency of sugar in France from the beet. By an imperial decree, factories were established in two or three localities, and considerable quantities of sugar were made. The downfall of Napoleon and the withdrawal of the government subvention practically ruined the sugar beet industry in France, and little was done, either in France or Germany, for about twenty years. Along about 1830 a considerable revival of interest in the sugar beet industry took place in Germany and France. In 1836 the first beet sugar society in the United States was organized in Philadelphia, and an agent, Mr. Pedder, was sent by this society to France to study the industry in that country. On his return an elaborate report of his observations was published, and an attempt was made later on by David Lee Child to introduce the industry in the United States at Northampton, Massachusetts, and he actually made about three hundred pounds of sugar. No further attempts, however, were made to manufacture beet sugar in the United States until in the sixties, when attempts were made at Chatsworth, Illinois, and points in Wisconsin, and later on in California, to manufacture beet sugar, but all these attempts resulted in financial failure. During the exposition in Paris, in 1878, Dr. McMurtrie, of the Department of Agriculture, made a study of the beet sugar industry, and on his return published an elaborate bulletin showing the condition of the beet sugar industry in France, and also studying the conditions in this country suitable to the growth of beets. Soon after the publication of his report, factories were built in Franklin, Massachusetts, Wilmington, Delaware, and Portland, Maine. These factories were at that time of the most modern construction, and embodied all the methods which experience had shown to be valuable in Europe. Large quantities of beet sugar were manufactured in each of these places, but the agricultural conditions did not seem to be favorable, and after two or three years all of them were closed, and at a financial loss. Meanwhile, the interest had not died out in California in the sugar industry, and mainly through the exertions of Mr. E. T. Dyer, a factory was finally established at Alvarado, California, which has been in operation since 1880. This factory, therefore, becomes the dean of sugar factories in the United States, and the gentlemen who, in its early history, devoted so much time to its success and establishment, deserve the greatest praise. In 1888, the Oxnard brothers built factories at Grand Island, Neb., and Chino, Cal., and later on at Norfolk, Neb. These factories have all been in successful operation since that time. A year or two later a factory was built by Mr. Claus Spreckles, and still later on one at Lehigh, Utah. Within two years, factories have also been built and operated at Eddy, N. M., Rome, N. Y., and Los Alamitos, Cal.

The total production of beet sugar in the United States during the present year will probably exceed fifty thousand dollars. Probably the largest sugar factory in the world is in California. During the season of 1896-7 the factory at Watsonville sliced one hundred and forty two thousand tons of beets. During the season just closed the factory at Chino, Cal., sliced one hundred thousand tons of beets The very largest beet sugar factory in the world is now in process of erection by Mr. Claus Spreckles, in the Salinas Valley. This factory will be ready for operation next July, and will have a daily capacity of three thousand tons of beets, which is about three times the capacity of the factories at Watsonville and Chino. The total product of sugar of the world is very little over seven million tons. Of this amount more than four million tons are made from sugar beets, and less than three million tons are made from sugar cane. The quantities of sugar which are made from the maple, from sorghum and the palm tree, while considerable, are not sufficiently great to affect the markets of the world. The sugar which is consumed in the world, therefore, comes principally, almost entirely, in fact, from sugar cane and the sugar beet.

The United States consumes more sugar than any country in the world. The total annual consumption at the present time is two million tons, of which about three hundred thousand tons are made at home, and one million seven hundred thousand tons are imported from foreign countries. Before the Cuban war the United States did not import a large amount of beet sugar—only about two hundred thousand tons per annum. The Cuban war has practically shut off from the United States an annual supply of nearly a million tons of cane sugar. This deficiency has been made good by increased importations of beet sugar, and this sugar is now coming into this country at the rate of nearly a million tons annually.

The people of the United States consume about seventy pounds of sugar per head per annum. Only one country consumes a larger quantity, namely, England, about eighty pounds per head per annum, but in England this is not all a *bona fide* consumption, as large quantities of sugar are used in that country for the manufacture of jellies, preserves and marmalades, which are exported to foreign countries. In actual eating, therefore, the United States heads the world, not only in the amount, but in the amount per head per annum. The United States possesses as oil and climate well suited to the production of its own sugar. It is, therefore, in the interest of our agricultural development to promote in every way the production of our own supplies. These suppplies are to come almost exclusively from sugar cane and the suger beet. The culture of the sugar cane is confined by climatic conditions to a comparatively small area in southern Texas, Louisiana and Florida. We must, therefore, look for the chief success of our indigenous sugar to the sugar beet. It is important that those parts of the United States which are best suited in soil and climate to the production of sugar beets be accurately mapped, so that no mistakes may be made by attempting to establish the industry in less favorable localities. Warmth, sunlight and moisture are the three climatic conditions which must be carefully considered. Experience has shown that the beet thrives best in those localities where the mean temperature for the summer months is about seventy degrees F. The theoretical sugar beet belt, therefore, in so far as temperature is concerned, regards this isotherm of seventy degrees F. for the three summer months as its central point. This isotherm passes through the northern part of Ohio, so that the whole of the northern part of Ohio, from Columbus to the lakes, may be regarded as located in the beet sugar belt.

In regard to soil, it is necessary first, that the surface be reasonably level. It is difficult to cultivate beets successfully on steep hillsides. A soil which does not bake, which has a considerable quantity of sand, and an easily permeable subsoil is one in which the beets do best. The tap root of the beet must have a subsoil which it can permeate to a depth of at least eighteen inches. If the subsoil be impermeable at a depth of ten or twelve inches, the beet will be deformed and pushed out of the ground. It is, therefore, necessary in the cultivation of sugar beets to thoroughly prepare the soil by deep plowing, accompanied by subsoiling to the depth of sixteen or eighteen inches. Aside from the conditions above mentioned, any good fertile soil will be found suitable to the growth of beets.

Under favorable conditions the farmer may expect an average yield of twelve tons of beets per acre, and if grown under proper climatic conditions, these beets will have an average content of 15 per cent of sugar. Each acre of land, therefore, properly cultivated in beets, will yield an average of about three thousand six hundred pounds of sugar. Unfortunately for the farmer, the manufacture of sugar from beets covers an outlay of a large capital and a careful technical control. It is not possible, therefore, for farmers to manufacture sugar from their beets in a small way successfully. It is necessary that there should be an accord between the agricultural interests and capital in this respect. A first class sugar factory should have a capacity of not less than three hundred, and better five hundred, tons of beets per day. Such a factory will cost from two hundred thousand dollars to four hundred thousand dollars, according to circumstances. It will thus be seen that such a factory is beyond the capabilities of most farming communities. The interests, however, of the farmer and the manufacturer are identical, and co-operative factories, in which farmers own a large share of the stock, will in the end prove most desirable. Such factories are very common in Europe, and will be in this country when the industry is once firmly established. When we compute the interest on the land, taxes, wear and tear of machinery and the payment of all labor of man and beast, it will be found that it will cost the farmer fully forty dollars per annum to grow twelve tons of beets and deliver them at a distance of three miles to a railroad station or factory. Twelve tons of beets of the character mentioned above are worth about five dollars per ton, so that it leaves a good margin of profit to the farmer, after paying himself and all his help full wages.

The introduction of a beet sugar industry in a community exercises a favorable influence on all branches of agriculture. In the north of France it has been found that the average yield of wheat per acre has almost doubled since the introduction of beet culture. The same favorable influences are also exhibited on other crops. These results are due to the fact that beet culture is only possible with the most careful scientific agriculture, and the farmer who practices scientific agriculture with one crop naturally practices it with all. Another favorable result to the farmer in the establishment of a beet sugar factory is found in the fact that the value of his land rapidly increases. Fifteen years ago the whole of the Chino ranche, in California, could be purchased for five dollars an acre. Today the most of that ranche is worth fully two hundred dollars an acre. This increase has been due solely to the introduction of beet culture in the Chino Valley.

In the growth of the sugar beet, the farmer will produce a crop in which there is no danger of overstocking the market. Our consumption of sugar, as has already been stated, is almost two million tons annually. In ten years it will be three million tons, and in fifteen years, nearly four million tons. It is thus seen that the farmer has at his doors, not only a splendid market, but one which is rapidly increasing. With the most favorable development of the industry it is not probable that that market will be fully supplied in the next twenty-five or thirty years. There is no other opening for the expansion of our agricultural interests which promises so much to the farmer as the culture of the sugar beet in localities where nature has provided suitable soil and climate. The farmers of Northern Ohio may well study the problems connected with the culture of the sugar beet, for they have undoubtedly the soil suited thereto, and a climate which, in many respects, is more favorable than that of Germany.

President Robinson: If there are any questions that you would like to have Dr. Wiley answer, he is here to answer them.

Mr. S. H. Ellis of Warren county: Dr. Wiley, I wish you would state, approximately, where the isotherm, which you have mentioned, passes through Ohio.

Professor Wiley: I would say, approximately, the isotherm which I have mentioned in the course of my remarks passes through Ohio, say, at a point about one hundred miles south of the lake.

Mr. Ellis: Then you would not miss Columbus by a great distance?

Professor Wiley: I do not know how far this city is from the lake, but approximately I would say one hundred miles south of the lake.

Professor Wm. R. Lazenby, of Ohio State University: Columbus, I think, is about one hundred and twenty-five miles from the lake.

Professor Wiley: This, probably, then is a little too far south, and the other counties further north will do better.

Professor C. E. Thorne, Wooster, O.: I wish to say that Bulletin No. 90, of the Ohio Experiment Station, answers this question and is fully confirmatory of what Dr. Wiley has said. The Bulletin is now passing through the press and may be had free by any farmer in Ohio who wishes it. On application to the Experiment Station at Wooster, you may obtain a copy. A few copies are now in the office of Mr. Miller, Secretary of the State Board of Agriculture, and may be had by members of this audience if they wish them. As I say, this Bulletin fully confirms the statement which Dr. Wiley has made in regard to the territory in Ohio within which the sugar beet can be successfully grown.

Mr. R. L. Holman, Clark county: What effect has a wet season or a dry season upon the quality of a beet or the possibilities of raising sugar beets? Is there any difference?

Professor Wiley: I think you would better refer that to some practical man in this state. You, of course, all know the effects of a dry season upon a crop. It always has an injurious effect and the same is true of an excessively wet season. I think, however, that the sugar beet is less affected by such extremes than other crops, but, of course, the crop would be injured more or less by these excesses.

Mr. Holman: In a wet season would you be as likely to get as good a quality of beet as in a dryer season?

Professor Wiley: You might not be able to get as high a percentage of sugar to the beet as in a dryer season, but you would get more tons per acre, and on that basis you would grow more sugar in a wet season than in a dry season.

Mr. J. P. Hine, Shinrock: Up in our section of the country, Erie county, we are very much interested in this subject of the sugar beet industry. In fact, interest has grown to such an extent that we now have a good prospect of having a sugar beet factory at Sandusky, in a very short time. There is one question in this connection which I would like to ask Professor Wiley. As I recollect, he said nothing about the export bounty from Germany. I would like to inquire what relation that has to the cheapness of production. I have heard it said that it cost foreigners—Germans and others– more for their sugar at home than we paid for it in this country by reason of export bounty.

Professor Wiley: If you will refer to the July number of the Forum, you will find an article by me, in that number, in which that subject has been fully discussed. I could not go into the subject in the time which has been allotted to me. It is a subject which would require considerable time to fully explain. There is an anomalous position on the part of Germany in this matter, which country seems anxious to furnish all nations with sugar except her own. For instance, granulated sugar in Berlin is quoted as being worth ten cents a pound and the same sugar in London is quoted as being worth two and one-half cents a pound. This is due to a high rate of local taxation. The German government taxes heavily all imported sugar and all domestic sugar, at a very high rate, but gives a liberal rebate to exporters, which is more than the tax levied. But our present law covers this point. The evil effects of the export bounty, of course, are fully understood, by the cheapening of the cost of production and thus injuring our industry. But our present sugar law, as you well know, fully covers the subject. We levy a duty on import sugars in accordance with their sugar test, as measured by the polariscope, and we also collect a duty of a certain number of cents per hundred pounds for all refined sugar, in addition to this, and upon all sugars above No. 16, Dutch Standard. Then we have a third duty which is called a contravailing duty, and which is equal to the amount of export bounties given by any foreign government, so that sugars coming to this country from foreign countries, include not only the polariscopic duty, not only the refining duty, but there is also a contravailing duty besides, equal, I say, to the amount of export bounty paid by the foreign government. This being the case the German refiners are prevented from giving an export bounty upon sugars imported into this country, because the contravailing duty of the present tariff law fully covers that subject and will not in any way interfere with our own domestic industry. Every pound of sugar coming from Germany will have to pay this extra contravailing duty before it can enter our ports. The same is true of France and other countries which may attempt to export sugar and give export bounties.

President Robinson: The next address is by A. W. Lightbourn, upon the subject of "The Wool Industry and What the Wool Exchange is Trying to Do."

Mr. A. W. Lightbourn, Editor Wool Record, New York, then spoke as follows:

Mr. Chairman and Members of the Convention: The supremacy of King Cotton, I believe, is threatened by Prince Wool. This is a matter of opinion, of course, but I could strengthen the statement, I take it, by an avalanche of statistics, if I chose. However, the professional statistician is a nuisance on an occasion of this kind and I shall simply state my theory with that dogmatic audacity that belongs to the special pleader always and to the theologian always, as well.

I say that wool is coming to the front in this contest and I say it positively. I say it sentimentally. I say it because I believe it; and I say it because I want it to be so. I say it also as a southerner, born and bred and dyed in the wool.

We have heard very many interesting things this afternoon about beets and sugar, as well as those valuable thoughts given us by Professor Roberts, a gentleman whose researches and experiments have shed the sunlight of knowledge into many dark places for us all. But when we contemplate the wool industry of this country, it seems to me that we have the most inviting, the most tempting field possible for an industrious and enterprising people to enter. Just think, that today we have somewhere between thirty and thirty-five million sheep in this country, and to supply the demands of this country, we would have to possess about one hundred and fifteen or one hundred and twenty million sheep. Now for just one moment,—not to go into the figures at all, but for just one moment,—think of the stretch between thirty or thirty-five million and one hundred and fifteen or one hundred and twenty million sheep and then contemplate the glorious possibilities of this great American industry.

Professor Wiley said that he was an American, but at the same time admitted a very courteous weakness towards some other country. Gentlemen, I am an American, first, last and all the time, (cheering) and I would not admit to this country under any conditions, under any circumstances, anything that we can produce ourselves in adequate quantity. (More cheering.) Charity begins at home. Yes, and it stays there as long as it is charity; as long as it is home charity and as long as there is at home any necessity for charity. When our own cup is filled to overflowing, then we can let the surplus flow into the smaller cups of those less fortunate than we.

Now, we hold this, that the wool in this country is equal to that of any other country in the world with the exception of Australian wool in some grades. We hold, secondly, that we can equal the Australian wool and improve on it. I only wish I had the time to absolutely demonstrate that fact to you. The only way to demonstrate it is not to argue it. You that have read the Wool Record will perhaps remember that we asserted some months ago that that was the case, and, as we throw the paper open to everybody, we had to publish Mr. Edwin Atkinson's article in rejoinder; but since that time Mr. Atkinson has written me, saying that he is now convinced that the first proposition is correct, of course with certain qualifications. Those qualifications, however, do not contradict or negative the essential spirit and intent of the first proposition.

I hold that in Ohio you have had wool,—and I think I could prove that from the history of your own state—that in Ohio you have had wool that would equal any raised in Australia. Mr. Clarke, of Lancaster county, Pennsylvania, has raised wool which would equal any grown in Australia, but of course not in adequate quantities. It could not be raised there in adequate quantities, but the quality was obtained. In the Panhandle, in Texas, we can raise enough wool, as good and better than anything raised in Australia, to furnish—I was going to say, a dozen worlds like this. Just think of that great state. If Mr. Dickenson—that grand Ohio pioneer in sheep and wool—had lived, if he had not died in 1831, when he proposed and had prepared to take the remnant of his flock down into Texas, Texas would beat Australia in wool today. You know that everybody in this world, man, woman and child, down to the little infant, born this minute, can live in Texas and have a seventy-foot square lot to live in. It is a pretty big state—"pretty considerable big" as the Yankee would say.

Now these are the conditions confronting us. Wool is an absolute necessity. It is more of a necessity than sugar. I say that simply for the purpose of contrast, sugar having been made so very important and that proposition having been elaborated and enforced so eloquently this afternoon. We could get along without sugar, but we cannot get along without clothing. We have to have clothing if we live under civilized conditions and in this temperature and climate. And if we are going to have the right kind of clothing, we have to have wool, because woolen fabrics come the nearest to absolute non-conduction of heat of any known fabric in existence. It is best for winter and it is best for summer, and it is best all around, and we reflect in the fabric itself the very degree of civilization under which we are living.

Now, you may wonder what this has to do with the wool exchange. I am going to tell you in a minute. I want to tell you first my ambition. I want to tell you the ambition of the men that stand behind the wool exchange, and what ought to be your ambition. That is to grow in the United States every pound of wool used by the United States. We can do it, but in order to do it we have to protect our own industry. We have to have standing there as an ever watchful, as a sleepless sentinel, an adequate tariff, at the gates of the sea. The present tariff is not adequate.

Now, I have been very much surprised since I came West to hear certain individuals refer to Judge Lawrence as very radical on this subject. I would like any gentleman here or any gentleman in the West or the East—I know they call him a fanatic in the East, but in the West I was surprised to hear this sentiment; I would like any gentleman here or any gentleman anywhere to put his finger on one single item in Judge Lawrence's contention, one single point in his argument for a higher tariff and prove that it is fallacious. You can not do it.

We have to have an adequate tariff; we have to have fair play in the handling of the wool; and to that end—I will come right to the point and raise the issue—to that end we have to do away with the so called wool commission merchants. That is just the object of the wool exchange.

The wool exchange is an organization, unfortunately located in the East. It is in New York. That is unfortunate for my argument in the West. Some western people think that anything that emanates from the East is selfish. Well, it is selfish. Disinterested action, disinterested friendship, so called, to my mind, is a very suspicious thing. I do not want the co-operation of anybody from a disinterested standpoint. I want him to be interested. I want him to feel that there is something that will accrue of value to himself by virtue of his fidelity to me. The very moment you put a man on that basis, you can trust him. You need not sit up at night calculating on his honesty. If he is going to suffer by infidelity or inefficiency as well as yourself, then you can trust him for the faithful performance of his service.

The wool exchange is not a philanthropic institution; it is pure business. Some of our friends come in there and they look at our standard types. We have just organized a standard type department which cost us about thirty thousand dollars. The government is going to recognize these standard types. Our arbitration committee the other day was discussing this question with some of the officials in Washington. It has been a great question—this question of standard type. You know there have been a number of commissions appointed to establish these types upon which all disputes or misunderstandings could be adjusted. We have those standard types and we are going to have a standard type representing every wool in the world, never mind how much of an expense it may be, how much it may involve of labor or money. You will find in reading the Wool Record, if you turn to the quotation page, a number in front of each grade. That number is the corresponding number that will be found upon the glass case in which the standard type of that wool is to be found.

Now our friends say, "Why did you go to this expense? Why do you have that private room on the eighth floor as well as the auction room on the lower floor? Why do you have all these wools encased in these wooden sample boxes representing wool in bulk? You don't get any money out of that." No. "Then why do you go to this expense? Why did you put a million five hundred thousand dollars in this business? Philanthropy?" Not at all. Our purpose is to do a business that will represent a hundred million dollars every year. That is not philanthropy, is it? And yet to have any practical business principle honestly and intelligently carried out along beneficent lines is the very essence of philanthropy.

Now we are an association. We want to bring you into that association. We want to reflect your interest there. We want to show you what can be done for wool as a unit. Not wool in Ohio and wool in Michigan and Texas and Montana, but wool in the United States. The wool industry as a whole. The wool industry as a grand, vital, organized unity. That is the purpose of the wool exchange.

What is more helpless than a man standing by himself. The very moment you bring men together with a common purpose, with a great animating ambition and mutual interests, then man comes forth at his best; you touch the main spring of his genius and you vivify and quicken the fountains of his imagination; you induce and accelerate the skill of his fingers ;you arouse his intelligence and the man steps forth either to bridge an ocean or to scale an Alp with the optomistic resolve of a necromancer. Man alone is helpless. Men in association are omnipotent. That is what we propose in connection with the wool exchange. Wool is worth more to-day by about four cents than it was before the wool men asserted themselves nearly a year ago, and if they assert themselves still more, wool will be worth still more.

Never was I more disheartened—although I am not given to that complaint—never was I more disgusted—and it was an infinite disgust—than when I went down to Washington during the discussion of the tariff bill and I found not a single wool man standing there representative of this great industry or championing its interests, but I found entrenched in the finance committee of the Senate the secretary of the National Manufacturers' Association, as a clerk of the committee that was to draft the tariff which was either to make or unmake the wool interests of this country. Why, it was an infamy. Independent of the personality of the gentleman, because we do not deal in personalities—I am speaking now of principle—it was an outrage. Why was it possible? Only because you were on your farm attending to your business, and others were on their farms and you did not know anything about it. You have to be organized. You have to be awake. You have to have some great, sensitive center where all these interests will be reflected and can be protected. We propose to do that for you. We have been doing it without your consent. We are going to do it eventually with your consent.

Now, gentlemen, I shall not consume any more of your time. This subject appeals to me strongly. It is the subject matter of my thoughts by day and of my very dreams by night. I left the active field of journalism, the editorship of a daily journal, to accept the position of secretary of the wool exchange and the editorship of the Wool Record simply because my heart was full of the subject and has been full of it ever since I was a little boy. I believe in the possibilities of wool. I would put all my money at stake upon that issue and I would devote the balance of my life to the enterprise, and I am not afraid of the result.

This is a progressive age. This is the age of advancement and we are taking on new forms, new adjustments of exertion, energy, enterprise and condition every day. The exchange is the typical idea if you will define the exchange as we do. Our exchange is not an exchange for futures. We have no gambling. We allow no gambling. The wool must be put up and it must be sold and it must be delivered and it must be paid for. (Applause.) Moreover, we do not believe in fictitious values. The ordinary exchange is for the creation of fictitious values. The wool exchange is for the protection of real values in wool. (More cheering.) These are two important points. Moreover, we believe that the wool of this country should be brought into an open market and sold subject to an unrestricted competition on the part of the actual consumers. Now, why do we say that? Simply because wool can be produced anywhere practically in this country and it will be, of course, grown in the largest quantities in the remoter part of the country where it is unsettled and open and the owners of the wool will be far away from the consumer and they want somebody to honestly represent them and to protect them and their product.

Why, do you know what the ordinary commission man does? The ordinary commission man sells your goods, not when you want to sell, but when the forces that are behind him want to buy. The ordinary commission man is the agent of any number of buyers, and he tells you that you had better sell when they tell him that they would like to buy. Why, that is a perfect farce in an industry like the wool industry. Now, I am not saying this for the purpose of scandalizing the commission men; not at all, because I have a great many friends among that class of people. I sympathize with them profoundly. I do not antagonize them because of any clashing of interest. But it is simply an outrage; that is all. It is an abuse that has to be corrected. We tell the commission man to come in as a broker; come in and buy and sell on the open market. He will make more money than he does as a commission man, that is that portion of his money that he makes honestly.

Now, there are two things that we have done for the wool interest. The first is an open market with unrestricted competition. The second is, we have given a general value to wool. When I went into this enterprise I found one startling fact, that wool was worth nothing practically as a collateral. It was an astounding thing to me. Wheat has always been recognized as a collateral. Wheat is the very representative of collateral value in staples, and yet wool can be raised more generally than wheat can. Now, the qualities of a collateral, in the rough, without going into it analytically, would be, first, general production, that is, extensive production, and the supply of a general demand. Then, of course, there would have to be such intrinsic value as would be susceptible of going long distances without deterioration in the product. Then, there would also have to be the other quality or capacity of maintaining its value for a long period without marked depreciation; and there should be also a certain fixity or stability of price. Wool lacked one or two of these. Why? Because it was not given the true recognition that its qualities merited. The very minute that the qualities which it possessed were recognized as constituting it a collateral, that very moment it received recognition. It was said during the passage of the recent tariff act that there was a surplus of two years' supply in this country, and all that sort of thing. Then, after it was ascertained that there was not two years' supply, they said that there was one year's supply, but, finally, they came down, as I have contended all along from the first, to six months' supply. That was the stand which I took in the Record on the first day of May on that subject and I stand there today. Notwithstanding that, wool is stable and firm in price and you cannot get a scare in the market in New York or anywhere else. There is no flunking, no slumping and no stampeding in the wool market. Why? Because there are no fictitious values. It is an open market and an honest trade upon a square basis.

As a result of this effort in regard to collateral values of wool as an investment, we have this proposition, which we make generally: We will advance to the wool man seventy-five per cent. of the value of his wool on the basis of eastern prices, which, in very, very many cases, would have been more than he received for his wool at home in his home market. He retains the property right in his wool. Then we say on that basis that his wool has created a new collateral and that this industry has created a new collateral. Some great financier has said that the man who creates a new collateral is as valuable a citizen as he who digs a running well in a desert. Capital is waiting, eager for investment. We have furnished it. How did we do it? By first establishing a bank of our own right in the exchange—a national bank and making the advances ourselves. A man never feels perfectly safe in following your theory unless you practice it yourself. When he sees you crossing the bridge that he is about to cross, then he thinks he can go over, too. We established the bank and made the advances ourselves, and the first thing we knew five banks came in and wanted to share with us, and it was not more than two months before one of the biggest trust companies in the United States plead with us to accept them on the same basis. The result is that to-day wool is good as a collateral in the biggest money market on the American continent and it is through the agency of the wool exchange that this is so.

Gentlemen, we invite your interest and co-operation. We invite your keenest inquiries and investigation. We invite you to come and see us in the wool exchange—your home. It belongs to you, and if there is anything in the form of abuse that needs correction, we invite your criticism in whatever form it may assume. I thank you. (Applause.)

John C. Ickes, Jefferson county: I would like to say a word in regard to this last topic. I think the gentleman will realize the prejudice that there is in parts of the fine wool growing sections of our state against a wool exchange, I came from down in the hills of Jefferson county where the Merino is king, where we grow Ohio wool, and I would say a word as to the prejudice there existing against wool exchanges and against this idea of an exchange where wool can be placed and where money can be drawn upon it at a low rate of interest. This idea of an exchange is not new with us down there. Twenty-five years ago the farmers of Jefferson county and of Harrison county and of adjoining counties in the state of West Virginia organized a wool exchange of their own. They sent down East for a man to come and manage that exchange for them. They got the wool all right and they sold it all right, but the man from the East pocketed the money and went back—I don't know which direction he took, but he took a roll of money with him.

Dr. W. I. Chamberlain, Summit county: Canada?

Mr. Ickes: Yes, perhaps, Canada. As a result, farmers had to give up their homes for which they had labored a whole lifetime. Wreck and ruin followed in the wake of that disaster. I do not say that anything of that kind will follow in the wake of the New York Wool Exchange. I do not think it will; but it shows that there is a ground for the prejudice which exists in the fine wool growing districts of eastern Ohio. That story has been handed down from father to son and that dark shadow is still resting in those beautiful valleys of the Ohio.

Now a word as to what I think this Exchange can accomplish for Ohio, and that is to prevent the sale of wool of other states as Ohio wool. There are thousands of pounds of wool sold in the markets of this country as Ohio wool that never touch the soil of the Buckeye state. It comes from the woods of Michigan, from the prairies of Indiana, from the sand hills of Kentucky, and from the mountains of West Virginia. Give us a fair show in the market and we will give you a product that is as far in advance of the other wools of the world as the Ohio man is in advance of the rest of the human kind.

Mr. S. H. Ellis, Warren county: Mr. Chairman, I wish to say just a word on this subject. You that know me know that I am very much interested in just such speeches as we have had from Mr. Lightbourn. I have no sheep and have had none for fifteen years. My sheep all have hair on. I have hogs. But I have never heard such an address so pointed and so appealing to the intelligence of men in many a day in regard to the necessity of organization and co-operation, as the address just delivered. If my Jefferson county brother got cheated, that is his misfortune. That is the trouble with us. We have been cheated so much that we look with suspicion on everybody, and we will never get over it until we agree to act together and in harmony. As the speaker said, one man standing alone is as helpless as helplessness itself, but the men of this state combined in common interest are more than giants. They are omnipotent. I don't know but what that is just the language that the speaker used. I want to emphasize that fact, and the importance of such co-operation. I don't know what the New York Wool Exchange is. I would advise that you wool growers examine into it and if it is not founded or conducted upon the right principle then start something that is founded and conducted on the right principle. You will never get your full rights until you act together. You will be continually encountering such obstacles as he suggested in connection with the Finance Committee of the United States. I am not going to argue on the subject of the tariff for an instant, but if you want a higher tariff on wool the wool men of the United States must combine and must speak authoritatively through some central organization. If the wool men of the United States did thus combine and were able to speak authoritatively through some central organization, then you could get the meanest tariff that was ever enacted—a tariff which would tax the clothes off of our backs nearly, (Laughter and cheers.) You could do anything you wished to if you worked in conjunction and with perfect co-operation. The point I want to emphasize is that of combination, co-operation and organization. Organize, not for the purpose of preying off of others, but to protect ourselves. Let the Ohio wool men reach their hands out and take hold of the hands of the others who are engaged in the same common enterprise. There is no need of your being unnecessarily suspicious. Why, a man as good looking as Mr. Lightbourn who would be trying to do something wrong, ought to be hung. (Great laughter and cheering.) The opportunity is too good for me not to emphasize the absolute necessity of organization, notwithstanding the hour is so late. You will never get your just dues until you do co-operate. (Applause.)

Mr. W. N. Cowden, Quaker City: I want Mr. Lightbourn to explain one thing that may be an anomaly to many of the readers of the daily papers with reference to the price of wool, and that is this fact.: It is a well known fact that our Ohio wools are worth about three cents less on the pound than similar grades of foreign wools. Now, I believe Mr. Lightbourn can explain that which seems to us to be an anomaly. If he can, I am sure we will all be glad to listen to his explanation of it.

Mr. Lightbourn: The explanation is very simple. It is simply the result of a combination of the big buyers to keep small buyers out and thereby to destroy competition and keep prices down.

Mr. Ellis: And the big sellers will not unite with the little sellers to help themselves.

Mr. Lightbourn: Yes, that is also true. I want to say one word in regard to our friend here from Jefferson county. Of course, this objection is a very good text for extended remarks if I had time to dwell upon it. But I have not. Allow me, however, to say this: That under the rules of the Wool Exchange, there could not possibly be any mistake as to Ohio wool or any other wool, for there is a standard type and if there is the slightest shade of variation the purchaser can cancel the contract and refuse to take the wool. There is the price; there is the standard type and if your representations as the seller of the wool do not correspond thoroughly and completely with the wool in bulk, then it is no sale. That rule is inexorable.

Mr. Ellis: Who decides that?

Mr. Lightbourn: Our Arbitration Committee consists of such men as William L. Strong, Thomas Dolan and men of that character. Some of the most prominent men of our country constitute the Arbitration Committee. Then you can appeal from that to the Executive Committee and to the Board of Governors, and if you want to you can go into the courts. Moreover, from the fact that all clearing is done through our Exchange, we are in a position to protect you by refusing to clear. So you see that you are thoroughly protected.

Now, in regard to the absconding wool man to which my friend refers, such a thing could not have taken place under the present arrangement.

Mr. Ickes: I said that I thought the Exchange would be able to do great good by the prevention of sellers outside of Ohio selling their wool as Ohio wool and I commend you for what you are doing in that line.

Mr. Lightbourn: I am surely very glad for commendation from such a source. If your absconding man had been interested as the persons connected with the New York Wool Exchange are interested, if he had his capital invested in that institution, he would not have run away. There is the point exactly. We want interested co-operation. Your man was a mere agent, similar to your commission man now, but the Wool Exchange has a million and a half of money invested and surely it is not going to run away. Then, moreover, you would not have been injured a great deal from the fact that you would have received 75 per cent. of the value of your wool and had it in your pocket and he could not have run away with that.

Mr. Cowden: I think we are all under great obligations to Mr. Lightbourn for coming here and favoring us with so pointed and interesting a talk on this subject. I move that a vote of thanks be extended to the speaker by this Convention and that we include in that vote, also, Dr. I. P. Roberts and Prof. W. H. Wiley. They all deserve our thanks and I know that we are all willing and anxious to extend our thanks to them. (Motion seconded by S. H. Ellis.)

Dr. Chamberlain: I heartily concur in the motion, but I have an idea that this motion will come in regularly as applying to all of the speakers under the head of miscellaneous business. I do not, however, object to the Convention thanking the speakers in installments—say at the same per centage suggested by Mr. Lightbourn, namely, 75 per cent., based on eastern prices. (Laughter.)

The motion duly seconded, then carried unanimously.

Dr. Chamberlain: Mr. Chairman, if you will excuse me for a moment I wish to say that I have heard a great many speeches touching upon this subject, but I never heard one put in clearer English so that you not only could understand, but could not misunderstand it, than the speech just delivered by our friend from New York.

S. H. Ellis: About co-operation, you mean?

Dr. Chamberlain: Yes.

President Robinson: We will now listen to an address by Mr. J. P. Hine, of Shinrock, Ohio, on the subject " The Beef Interests of Ohio "—A Neglected Industry."

Mr. J. P. Hine then read the following address:

Mr President, Ladies and Gentlemen:—

That I have nothing new to tell you, you will doubtless perceive before I have finished. I have not been engaged in deep research, learning the secret processes of nature. I have not been engaged in experimental work, farther than in the sense that every farmer is somewhat of an experimenter, nor have I any new theory to expound; so I have nothing to add to our store of agricultural knowledge and literature. In what I have to say I shall refrain from giving figures; I shall not quote statistics, which at best give us only a part of the whole truth which is oftentimes misleading. Nor will my remarks apply to all sections of the state. But taking the state as a whole, I will assume that which I know to be true in many sections; that the beef interests of Ohio are badly deteriorated, even to the point of neglect.

Although I am somewhat of a specialist, I have no new truths to impart to you—nothing that you do not already know. Rather would I call to memory some of the things you used to know and do, but have not given thought of late years, or if considered at all, put away as a thing of the past and not to be seriously considered by the farmers of Ohio today. An industry, once one of our greatest resources, but now driven by keen competition of cheaper grains and grasses to the newer states and territories of the West, to be replaced by what? A competition still more keen, in the markets of the world in these same grains and grasses, thereby robbing our farms of their fertility which we must replace if, indeed, it be replaced at all, by the expenditure of millions of money for commercial fertilizers. Better far expend a part of these millions for the purchase of the cheap grains of the West to feed stock of our own growing. The railroads can haul them across a state or two, to us as cheaply as they can bring us the concentrated fertilizer, of sometimes doubtful value, from the four quarters of the globe. Four-fifths of our agricultural implement and fertilizer agents would better, by far, be feeding cattle and growing sugar beets, if you please, while the remaining fifth would make a competency selling the farmer only that which he needed, and at a fair margin of profit.

It has not been many years since almost every farmer was raising a fairly good steer or two, or perhaps I would better say a few fairly good beef animals; for the local butcher was not adverse to using a nice plump heifer occasionally, and although he insisted upon buying her for less than he was willing to pay for a steer of equal weight and merit, I will venture his customers never knew that this was the one or that the other, and doubtless never bought anything but the best cuts of prime two and three-year old steers. And this same butcher, without a doubt, knew of every beef bred calf and two-year old heifer and every two and three-year old steer within a half day's ride of his place of business. But, alas! where does he buy cattle today to supply his market? Does he put his pony to his buckboard and start for some good farmer within easy reach, whom he suspects to be in need of a little ready cash? No. He knows his farmer neighbors cannot supply his wants, so he consults his time table, and, after a visit to the bank, takes the fast train for Chicago. Next morning he makes his way early to the Union Stock Yards, that wonderful live stock market, the greatest in all the world. Chicago is indeed a wonderful city, a city of rapid growth, the like of which the world has never seen. But of all the sights of this great, blustering, windy city, nothing is so grand, so animated as a view of the Union Stock Yards. Nothing has contributed more to the wealth and growth of the city than these stock yards.

The Nickle Plate Railway runs through my farm, the Lake Shore and Michigan Southern is near at hand and as I see the fast freight trains go by, I see they are composed largely of the big yellow cars—"Swift's Refrigerator Line," "Armour's Refrigerator Line," "Cudahy's Refrigerator Line," "Armour's Extract of Beef," etc., car after car, train after train. Yes, the business of the great packing houses and abattoirs adjoining the Union Stock Yards, is so vast that it brands us abroad as a nation of pork packers and curers of meats. Not that I dislike to see our products go abroad, far from it. I wish that every car of meat that starts east from Chicago, would continue to travel East to the seaports, and on East across the Atlantic. But this is not the case, one is dropped off here, one yonder, one or more at every town of any size. So with our little town butcher going there to buy his beeves, and our larger towns and cities buying both their live cattle and dressed beef there, is it any wonder that Chicago is great, that the Union Stock Yards are great? You pay her tribute, I pay her tribute, we all pay her tribute, to what extent, who can estimate? Rome in her palmiest days as mistress of the world was not a more exacting tax collector.

Have we then as farmers of Ohio found something so much better to do, something so much more profitable that we not only surrender our just proportion of this lucrative eastern trade, but must needs be also a heavy buyer of western meats? Perhaps the sugar beet will pay our meat bills in the future, if it does it will indeed do well, for at best when we can employ one hand tilling sugar beets, we have many mouths eating meats. And if we make a good profit on sugar beets, why not keep it here among ourselves? Why send it all away for meats which we should be growing along with our sugar beets? The same principle in economy that prompts us as a nation to grow our own sugar, should prompt us as a state and as a community to grow our own meats. Especially as we have abundant natural resources to do so. I maintain that with the proper use of our natural resources and advantages and with the proper regard for the demands of the market and profitable feeding, we can still successfully and profitably grow beef in Ohio, in competition with the West. Of course our prices must necessarily be their prices plus transportation and shrinkage—two quite considerable items. The farmers of the British Isles, with a home market for breadstuffs and all other produce vastly superior to ours, still cling to their herds and flocks as their surest source of present and future profits. By skill, care and perseverance, which we well might emulate and imitate, they furnish their home markets with the highest grade of beef and mutton which commands a price away in advance of the best that we can send them. And they do this on feeds cheap and abundant of production, but unsuitable for human consumption. Can we not do as well?

Our successful competition with our sister states of the West in beef production can all be summed up in three words, or six words, if you please, namely: "Good Breed," "Good Feed" and "Good Heed," mighty words these. They hold in their definitions all that there is of successful stock breeding and feeding of any kind, be it horses, cattle, sheep, swine, poultry or pet stock. I know not whose words they are, they are not mine, but I will make this application of them. Any one of these will not insure success without a goodly portion of each of the others. No combination of any two will bring success, all three of these ingredients must be used, yet no one can name an ideal proportion. The mixture would be as varied as the characters of the different men who were doing the blending or of the different conditions under which the blending is being done. But that a goodly portion of all three of these ingredients is required, no one can for a moment deny.

But let us consider them separately, commencing with the first—" Good Breed." Good breed does not necessarily mean registered animals of one of the standard breeds. For feeding purposes a crossbred or a grade is oftentimes, if I might not indeed say, usually, better than pure bred, although perhaps not producing quite as fine a finished product. But whatever be the grade or standard of quality of a herd, in order to improve or maintain that quality, if it be high, the use of a good, pure bred sire is imperative. Without such we cannot hope to advance or to obtain uniformity of type, a condition quite essential to profitable stock growing of any kind.

I breed pure bred cattle of one beef breed, my neighbor breeds pure bred beef cattle of another breed. We are not growing them for the beef market. We are growing breeding stock. We ship one here and one there to fill this demand for pure bred sires. Where do our best animals go? To our neighbors? No. To the farmers of Ohio? With a few exceptions; no. Those that we value highest, those that bring us the best prices, go West. When Horace Greely cried, " Go West, young man, go West!" He didn't mean for all the enterprising young men of Ohio to go; no, some must needs stay for politicians; I don't see what this great country of ours could do without Ohio politicans; but it does seem that a vast majority of Ohio's enterprising young farmers must have heeded the call, and in the competition we enter into with them we match our conservatism against their enterprise, and with what results? In an era of prosperity, such as the live stock industry is regaining, they make dollars to our dimes on live stock. To be sure in a time of adversity, such as we have just passed through, our conservatism stands us in good stead. True economy is a virtue and conservatism is a good thing, but with equal sagacity, it will not match enterprise. And oftentimes when talking of pure bred sires, I feel like saying to the farmers of Ohio, "let us stop *saying* and try *making* a few dollars." And if we can make this grand commonwealth of ours grow her own meats it would be the biggest saving we could accomplish and the making of a good many dollars for every one of us. The type of cattle that is in demand now both on the market and as profitable feeders is vastly different than when we were in our best beef producing days, and to obtain cattle of this desirable type, it is necessary that we breed and grow them ourselves, as they are seldom found on the market save in the finished form.

Kerosene oil has supplanted the use of tallow candles in our households, cottonseed and other oils are produced so cheaply that there remains little use for tallow, and with the decline of oleomargarine, Armour's Jersey butterine and kindred products, the uses of leaf tallow are not likely to increase, at least, never to a point in value that would put it beyond a "by-product."

Some breeds store more surplus fat or tallow, in the carcass of the mature animal than others. With them we have more reason for feeding off at an early age than with those breeds that do not.

The demand, then, is for young cattle of medium weight though well-fatted and ripe. There are many reasons why a young and growing animal is essential for the block which I cannot take time to discuss in this paper. Breeders should not construe all this to mean that they need not have their breeding stock of good size. They will make a mistake if their breeding stock at maturity be not of good size. Not the big, upstanding, slow maturing stock of old to be sure, but neat, compact animals of good weight at maturity in breeding order. They must be early matured and have the capacity to fatten quickly and young, and to be good farmers' cattle, they must also be capable of developing a good flow of milk. All up-to-date breeders of the beef breeds have this class of cattle to offer, and I know of no place where they can be bought better or cheaper than right here in Ohio; for a'l through her decline in beef growing,Ohio has maintained,or rather contained—for they have been largely maintained by other states—some of the best pure bred beef herds in existence, of several breeds, herds that go out to the larger state fairs and win their share, and more, against the world. All of which proves conclusively that we are abundantly able to produce as good beef as any one.

The newer type of beef animal is fast bringing about another change that will prove of great advantage to the grower. The old idea that a first-class beef animal must necessarily be a steer is fast disappearing. And the difference in the market values—I say "market" values as the difference in actual value is very slight—of a steer and heifer of equal weight and qualities is steadily diminishing. Whether this difference will disappear is a question. In the English and Scotch fat stock shows and markets for a number of years past, heifers seem to have had the preference.

Before the promiscuous advent of the little Jersey on our farms, Ohio was well stocked with the noble shorthorn; the old slow maturing sort to be sure, but a most excellent foundation upon which to cross our newer type. "A little learning is a dangerous thing," while, "much wisdom is a blessing." To us a little Jersey has been a costly thing, while much Jersey to the dairyman has no donbt been a blessing. I can but wish that they were good beef animals so the butcher and not the farmer would get the dairymen's culls. All farmers can't be successful dairymen, we know that because we have all tried it with disastrous results to ourselves as well as to the dairymen proper. Nor can we all be successful fruit growers. In many sections of the state we are all trying for some of those big profits that were once the horticulturist's. And he, the horticulturist, as well as the dairyman, might well wish to see the sugar beet get a start and see a general revival in live stock, that he might again gather some of the fruits of his labor as well as of his trees and vines. So much for the first division of our subject. Let us then to the second.

"Good Feed" has been one of the prime factors in the development and production of the modern beef type. The well bred animal holds within itself(latent perhaps) that possibility of growth and development which is lacking in the scrub; yet on many farms it receives but poor opportunity to demonstrate its possibilities, while on others it is afforded the opportunity too late in life to reach the best results "Baby beef" we want. Yes, prime twelve hundred-pound to fourteen hundred-pound yearlings that will outsell the best fifteen hundred-pound to eighteen hundred-pound three-year-olds and make more dollars two to one for the producer. Think of saving twelve to eighteen months' feed, at an age too when the animal requries much more food for self support But baby beef is not made from skim milk calves, no matter how well bred. To attain that quick growth the calf must have the mother's milk with all its natural fats and taken in the natural way. "But," you say, "we cannot keep a cow a year just to raise a calf." Well, then, let one cow raise two calves, and milk one-half of your cows yourself and let the calves milk the other half. you can surely spare half your milk during the flush summer months; you would get more for the other half. You need not give up the best cows for this. The cow with the poorest test but good flow, the cow that is hard to milk but gives a good quantity will do best by the calf; just the ones you can best afford to spare for a few months during the busy summer. The calves should be kept by themselves on good grass and allowed to suck morning and evening and at one month old should be eating a little bran or oats and shelled corn, fed, without grinding. The amount of grain they will eat is small for some time, but is very necessary to keep them firm and in best possible growing condition. Calves handled this way will do fully as well, two to a cow, as they will running with the cows each taking its mother's milk, and when weaned will do much better for a time. Not that they wouldn't do better with more milk, but the little milk they do get in the natural way together with their grain and grass and an abundance of pure water at all times keeps them in fine flesh and form which they must never be allowed to lose.

With older stock "Good Feed" does not necessarily mean a heavy grain ration. I would point again to our British cousins who produce such fine cattle with little or no grain, which, of course, is the other extreme. With our comparatively cheap grains we should strike the happy medium and use sufficient to keep our stock in good heart at all times, for which, if well bred stock, they will abundantly repay us.

Now, as to the third ingredient, "Good Heed," its definition is nothing more or less than good common sense. It is as essential to the other two as a rudder is to a ship and bears a quite similar relation.

I could hardly close this paper without a word in regard to horns. The advent of the polled breeds and the dehorning clippers has lessened the cost of raising cattle somewhat, both in the matter of labor and expensive accommodation. The care and handling of a herd of hornless cattle is not unlike that of a flock of sheep. So that the man who persists in growing horns, or having grown them, refuses to take them off, is handicapped in the start.

If every farmer in Ohio who is so situated that he can, and is not already doing so, would raise two, four or six good beef animals each year, in the way I have designated, he would find that the revenue derived from them would be considerable. He would see his lands growing more productive year by year, he would see millions, now going elsewhere, remain in circulation here, and, perchance, might grow a surplus and side-track some of those eastern millions, westward bound, in the place of this western beef eastward bound. Then will this great state of Ohio be not only the "mother of great men," but she will be a state of prosperous farmers as well. A few years ago we were hurriedly and anxiously disposing of our flocks of sheep at ruinously low prices. Did we find anything better or more profitable to take their place? No. The man who held to his flock is now in position to profit largely. And now as we are hurriedly and anxiously trying to replace them at almost prohibitive high prices, let us not forget that the competition of the West will be equally as great in mutton and wool as in beef. Then, to secure our full share of the prosperity in store for the live stock industry, let us look well to our herds, even as to our flocks.

Prof. T. C. Atkeson, President of the West Virginia State Board of Agriculture and Dean of the Agricultural College of West Virginia, being called on for a few remarks, addressed the Convention as follows:

Mr. Chairman and Citizens of Ohio: I have not had the fortune to be born in Ohio where so many great men have been born, but I came about as close to it as any one could and not be born on her soil. To a mathematical nicety I came within one of it—by my father. I could hardly get closer to it and not be born in the state. I have heard since I have been in your capital city many expressions of loyalty to your magnificent state, and every time I have been reminded of a little incident that occurred near my home several years ago when Col. Early, the father of Gen. Jubal A. Early, of rebel fame, came into our great Kanawha Valley, having purchased a splended farm, with a long train of servants, machinery and equipments to take possession of the farm, and while the steamboat was nearing his newly purchased estate, he was offered several thousand dollars for his bargain. Col. Early being a pious man, as he was, cast a look backward and said, "Here and Heaven." For myself I feel the patriotic inspiration I have had from the Ohioans sufficient to say that between the Great Kanawha Valley and Heaven there is no intervening space for me, but if there were an intermediate state that I were compelled to inhabit I would certainly move to Ohio. We have heard, and I believe, that Ohio produces great beets, great cattle, great sheep, great men and great politicians.

I promised your President that it would give me much more pleasure to talk two minutes than to talk two hours, and when this convention comes to think of the people who have addressed it during its patient listening, I am sure that they will more heartily thank me, than any of the gentlemen who have so thoroughly entertained you this afternoon because of the brevity of my remarks. I feel that you are certain to do that because you must certainly be tired of listening to this continuous stream of talk, entertaining and profitable as it has been. But I do want to say that I came to your state and to your capital city to get something of the inspiration possessed by the farmers of Ohio and to attend these meetings and to visit your magnificent University, which we have heard extolled on all sides and on many occasions since coming to Columbus. I expect to go home to our little mountain state feeling that for one hundred years or more the tide of civilization has trended around West Virginia's mountains and settled in the magnificent valleys of the state of Ohio. While that is true, we feel that this tide of progress that seems to be filling the hearts of the American farmer everywhere is flowing back upon the mountain state of West Virginia, and we feel indebted in many respects to you for the advanced steps taken by the progressive farmers of Ohio in agricultural science and progress. I say we feel this, and the only reason we are not Ohioans is because we happen to be born on the other side of the Ohio River. We feel that the chasm is not so deep or so broad but what we can shake hands with you across the Ohio River and enjoy as far as conditions will permit with our Ohio friends these rapid strides in the advancement of agriculture. I thank you. (Applause)

President Robinson: We have one more address to listen to before adjournment. The subject is, "The Bright Side of Farm Life," and the address will be delivered by John Begg, of Columbus Grove, Ohio.

Mr. Begg: Mr. Chairman and Gentlemen of the Convention: Before I begin upon my paper, I want to say that while I listened to the masterly address that you have been treated to this afternoon, when I listened to the excellent address upon the Wool Question by my distinguished friend upon my left, I do not wonder at the encomiums that were showered upon him, but I could not but note that it was not his splendid diction, his convincing logic, or his masterly array of facts that brought forth these encomiums but it was the encouragement that the wool growers of Ohio got from his statements to us upon that subject. Today a vast gloom has settled over the agricultural interests of this great state of Ohio, notwithstanding the many bright things that have been said by way of natural and artificial resources. It is because of that disposition, that gloom, that I shall ask your attention for a few minutes while I read a few suggestions in regard to the bright side of farm life.

When I attempt to talk today upon the "Bright Side of Farm Life," I am well aware of the fact that I will have to overcome the incredulity of many farmers before me upon this subject. For it is too true that large numbers of our farming population do not believe that farm life has any "bright side." Especially is this true since prices of almost all kinds of agricultural products have depreciated from what they were a few years ago, until they have reached the low prices now prevailing. And if the sole purpose of life were the accumulation of wealth, or if we were to measure every source of enjoyment we obtain from our chosen vocation in dollars and cents, we certainly would be justified in entertaining rather skeptical opinions regarding the pleasures and happiness to be derived from agricultural pursuits at this time. But this is not true. The sum of human happiness is not made up entirely of material acquisitions, but depends almost altogether upon the disposition and conduct of the individual; or at least as much upon these things as upon our environments. And it should be the purpose of every one to give encouragement to their fellows whenever possible. We should occasionally at least look upon the advantages as well as the disadvantages we enjoy in our business. By so doing we will very often have cause to rejoice because of the many blessings we enjoy as farmers that are not enjoyed by those who are differently situated.

We very often allow ourselves to compare the dark side of farm life with the bright side of professional or business life and always find the comparison a most unfavorable one for us.

We are apt to look upon the minister with whom we are in frequent contact as a person enjoying a life of ease and leisure in comparison with us. Or we see the physician, the lawyer, teacher, or merchant in his leisure moments and jump at the conclusion that each of these has a much smoother road to travel through life than those who are engaged in farming.

No greater mistake can be made than this. Could we see and know the anxiety and nervous energy expended by either of the persons named, we would find that it would far exceed anything in that line that we ever experience or endure regarding the welfare of our flocks or crops. Our Creator, in his wisdom, so distributed his blessings that each department of human industry has an equal share of the good things of life if we only put ourselves in a position to enjoy and appreciate them, and very often our dissatisfaction with our conditions arises rather from a lack of appreciation of the many blessings that we enjoy than from a lack of the blessings themselves. The first essential to success in farming is a love for the work; without this we cannot hope for success; with it we seldom fail. Unless we believe we are better adapted for agricultural pursuits than for anything else, we can neither expect enjoyment or profit from our business.

We must take delight in developing our business to its highest possible conditions, we must extol its advantages and minimize its hardships. How many farmers are there in the country who go through life believing that through some influence they have been placed in a business not congenial to them, and thinking that if they were in some more lucrative or honorable business they would succeed better. Such persons are generally as unhappy as they are unsuccessful, and would be in just the same condition if engaged in any business where skill, perseverance, industry or good management were necessary to success.

And when this feeling of dissatisfaction becomes general among the farmers it not only destroys hopes for better things among those who are older, but it tends to drive the better class of young men and women away from the farm, and leave only those who are not capable of filling any other position to conduct the business of agriculture.

The result of this unfavorable sifting, if kept up very long, will be a general lowering of the farming classes, as compared with those who are engaged in other industrial pursuits. So that any one who gives encouragement to the farming classes, and creates in their minds a stronger love for their business, and leads them to take greater pride in its development, is a benefactor and friend, not only to the farmers, but to every citizen of our common country. And on the other hand, he who by any system of teaching endeavors to create dissatisfaction or unrest in the minds of the farmers, is an enemy not only to them, but to all mankind.

Let us look for a few minutes at some of the conditions and environments that surround us, as farmers, and see if it be not true that farm life has a "bright side," that we enjoy innumerable blessings with which we become so familiar that we lose sight of their value and fail to appreciate them.

Our outdoor life insures constant enjoyment of the most beautiful works of nature. Our homes are—or can be, if we so desire—situated amid the most fascinating and pleasing scenery that any lover of the beautiful could desire. Our fields are carpeted with living green, while our orchards and gardens are clothed in robes of nature's finest workmanship; all giving forth a sweet and enchanting fragrance that would call forth praise from the most ungrateful soul. And yet we often find ourselves entertaining feelings of envy toward our city friends because they may have their walls decorated with more of the works of art; when, if we would only consider, theirs is but an imitation of that which we possess. Ours, the handiwork of God; theirs, the handiwork of man; ours, surpassing theirs in beauty and loveliness, as far as God's way surpasses man's ways.

But this is not all. Farmers have a plentiful supply of food for themselves and those depending upon them at all times. If they do not have it in sufficient abundance to supply all the necessities of their families, it is generally due to their own lack of energy or negligence.

So accustomed are we to having an unlimited supply of food always at hand that we can hardly realize the existence of a condition that would give us any solicitude regarding this matter. Yet while this is true with farmers, it is equally true that there are multitudes of people in this country who are in a constant state of anxiety regarding the supply of the comforts of life for their families. There are thousands of good industrious citizens in every city who would willingly provide for their families if they could, but who are compelled to rely upon the benevolence of their fellow citizens to carry them and their destitute families through the winter season. Did you ever know of any "free soup houses" established by associated charities for the benefit of the rural population of this country; dispensing boxes of goods donated by kindly disposed persons to supply the necessities of the farmer and his family? No, my friends, if such things were spoken of even in our dullest times, it would be considered too absurd for serious consideration.

But we not only have food in abundance, but we have it in its purest and freshest condition. So much so that few of us have any definite idea of the amount consumed by us in any one year. There are no "pure food" laws upon our statute books to prevent farmers from adulterating the products of the garden, truck patch, orchard, field or feed lot. Such a thing would be impossible even if we were inclined to do so. In addition, we who live in the country have an unfailing supply of both pure water and air in such profusion that we never stop to estimate their value; yet how much of the health and happiness of the rural population is directly attributable to these two necessities. In our large cities it is not so. It is impossible to provide water as pure when prepared by the skill of man as that living water that comes from nature's reservoir, filtered as it is through God's filter. Again, the air we breathe in our country homes is not contaminated with the noxious gases and fumes arising from places unfit for man's habitation; and the moral atmosphere in the country is just as much purer than that of the city as is the physical, both of which conduce to a strong, physical and moral development in those who enjoy them.

Another blessing farmers enjoy in greater measure than other men is that of having steady employment at all times. I know some will say our employment is *too* steady, we have too little time for study or recreation, we have to work too long hours, etc. But, my friends, if we will only consider this matter a little we will find that is not true. We do not work longer hours than other laboring men. On the contrary if we will compute the time the farm hand is actually employed, carefully deducting the time lost in resting, we will find they are in actual service fewer hours in twenty than the average laboring man. There are seasons of the year when this might not be so, but taking the whole year and making an average we will find it true. But what does it mean to have steady employment? Ask the laboring man who is out of work and has a wife and family of children depending upon him for support, for an answer. I believe that this fact alone is one of the greatest blessings coming from farm life. Besides the farmer works when he pleases and under his own direction; he is subject to the dictation of no boss, foreman or other overseer, but can go to work when he pleases and where he pleases so far as any outside dictation is concerned. There are no labor unions among farm laborers; no organized strikes, compelling them to quit work whether they desire or not; no noisy crowds traversing the country highways angered by enforced idleness and threatening the destruction of life and property to avenge any real or supposed wrongs committed by their employers. No, they are independent, and guide and control their own business and are generally rewarded according to the amount of energy and good managenent they exercise in that business, but this is true of scarcely any other business. How many are there of our fellow citizens who are just as industrious as we, who would willingly work if they had an opportunity, but who are standing in the streets and in the market places of our large cities, seeking employment and finding none?

I believe that this matter of furnishing steady employment for our rapidly increasing urban population is one of the most serious problems confronting the American people today, and unless it is solved satisfactorily, the dangers arising from the unemployed classes will be a serious menace to the future existence of our free institutions. Yet no such condition confronts our farmer. His hands are never idle. They have always something to do; some way by which they can earn their daily bread.

Farm work is less wearisome than other forms of physical labor. Our hardest kinds of work last but a few days, or weeks in any one year. There is that constant change of work that gives both rest and relaxation to the muscles and recreation to the mind. The farmer works more at will. He stops oftener to rest. If he has his business well in hand he can visit a neighbor or attend an institute without either stopping his business or experiencing loss from his temporary absence.

Again, the farmer can be at home with his family more than almost any other class. He thus has the pleasure of their constant association. He has direct supervision over the conduct of his children. He is always present to counsel with his wife regarding the welfare of his family. He is always near to comfort and advise in times of sickness, to protect in times of danger, in fact the character of his work is such that he can ever be present to give a father's care and direction in all matters appertaining to their welfare. How many of our fellow men are there who never see the bright faces of their little children during the day at this season of the year, except upon one day in seven. How many are there who eat a mid-day meal with their wives and children except on the Sabbath day. See the laboring men who throng the busy streets of our large cities morning and evening of each day as they go to and from their places of labor. Each one carries in his hand a small bucket containing his noon-day meal, which he eats alone in the same shop or factory in which he labors or in some common place in company with his fellow workmen. But the farmer starts in early morn, enjoying the invigorating influences of the morning air, singing or whistling a boyish tune, apparently indifferent to any of the ills or cares that life is heir to, and when the time arrives for the noon-day meal, he is not compelled to eat it alone, amid the din, and smoke of the place where he worked, but he finds his meal upon a tidy table steaming fresh from the range or oven ready to be partaken of in the company of his own wife and children. This is no fancy picture, my farmer friends, but an every-day occurrence which takes place in tens of thousands of homes in our country, and is so constantly enjoyed by us that we fail to properly appreciate it.

But this is not all. The country home upon the farm is the best place known to man to raise children in such a way as to develop the best type of manhood and womanhood. The environments of a farm home are such that they tend to develop the good and repress the bad qualities of our natures. Our young people are not subjected to so many evil influences as children who are raised in cities. They are more constantly under the care and influence of their parents. Their associates are generally limited to members of their own household, or some of their parents' selection. Their playground is confined within the limits of their own dooryard or farm. They are surrounded while their minds are in the most plastic state with the works of nature as seen in animal and vegetable life. They are taught the value of time while young. The little boys and girls in the city can have no such pleasures. From their earliest childhood they are surrounded with evil influences of every kind. Their companions are very often of the most unacceptable kind, yet their association are as unavoidable as they are objectionable. The farmer can take his boy with him to the field, orchard, garden or feed lot, and while quite young teach him by example and precept, the first lessons in practical business principles. This not only teaches the child to work when of tender age, but lays the foundation for future usefulness. He begins to realize that he is created for some purpose in life, that his success depends almost entirely upon his own industry and perseverance. He is taught to overcome obstacles rather than avoid them. More than that, the lessons he receives during the day in the different sciences in the school room are happily yet inseparably blended with his first lessons in business which he receives while performing his childish task morning and evening. He forms habits of industry and perseverance that adhere to him through his entire life. These are some of the reasons why the little, backward, bashful, country boy develops into the progressive, successful, business man. This is the reason that the uncultured, awkward, rural lads are transformed in later years into philosophers, poets, statesmen, college presidents; in short, develop into such strong, stalwart manhood that they fill acceptably every position of honor or trust that their fellow men have the power to bestow upon them. Nor is this superiority in after life due to any superior ability either of head or heart that nature has bestowed upon them, for God who created us is no respecter of persons in the distribution of his blessings, but as indicated a moment ago dispenses his blessing without regard to the temporal conditions of his creatures. It is due rather to the superior advantages enjoyed by the country bred boy or girl in being surrounded by environments that are better calculated to give proper exercise to the mental faculties and also afford better opportunities for forming habits of self reliance and obtaining more practical knowedge of business while young.

Should not this fact alone that we are furnishing and sending a constant stream of fresh, vigorous, country blood coursing through the business and professional arteries of our great enterprises, giving them renewed life and vigor, cause us to look more upon the "bright side" of our business life and put a higher estimate and appreciation upon these invaluable blessings which we possess, not by purchase, but by inheritance.

But this is not all. Farm life tends to the formation of frugal habits while city life generally leads to extravagance. I know this is not always accepted as true. We have a certain school of self constituted teachers who would make us believe that all the distress and misfortune that come to the business of agriculture is either directly or indirectly attributable to the extravagance of the farmers or their families, but any one who has the slightest knowledge of the first principle of political economy knows that a nation never enjoys so high a degree of business prosperity as when her people are enjoying the luxuries of life; and when every one begins, either from choice or compulsion, to retrench in his expenditures, the commercial streams begin to dry up and business stagnation ensues. But farmers are not tempted to indulge in extravagant practices. Their isolated condition and lack of association with others prevent this. True, there are instances where farmers become dissatisfied with the slow process of acquiring wealth employed in the country and become so enamored by the glittering attractions of city life that they seek to better their condition by leaving the farm and going to some of the various kinds of business in the city. They do not stop to consider that large profits in business are always accompanied with great risks and that those who succeed are few in number compared with those who fail. They fail to realize that a man must have a natural adaptation for a certain kind of business if he expects to succeed and that while many business men in our cities amass much larger fortunes than those who are engaged in agriculture, yet it either requires peculiar conditions or a lifetime of persistent effort to do this, neither of which are probably within their reach. Besides, happiness is not, nor cannot always be, estimated in dollars and cents, but depends just as much or more upon the habits and conduct of a person than upon any outward conditions or circumstances. Farm work under our present conditions is rapidly becoming one of the easiest forms of physical labor; the farmer has but to guide the machine that does the work instead of doing the work himself. More mind but less muscle is required at this time in the operations upon the farm than at any other time in the history of agriculture. This relieves us of much of the drudgery of the past and leads us to enjoy more pleasure and comfort in performing our work.

Besides and in addition to all these, our facilities for social enjoyment and mental improvement are increasing so rapidly that we can improve our conditions in this way if we will. Our "farmers' institutes," "free libraries," "reading circles," in connection with our "granges" "farmers' clubs" and kindred organizations are all agencies by which we can both improve and enjoy our rural life if we only take advantage of, and improve, the opportunities thus afforded us.

In view of all these invaluable blessings, my friends, are we not justified in looking upon the "bright side of life?" Have we not cause for self congratulation? Should we not go home better satisfied with our vocation? Can we not engage in our life work with increased courage, with renewed vigor and ambition, with our hope revived, our love strengthened and our determination to succeed increased? Should we not enter upon our work with a determined purpose to bring it up to a higher degree of excellence, striving not only to do our work well, but always remembering that while there are hardships and disadvantages connected with our business there are innumerable blessings also, which, if properly enjoyed and appreciated, will make us a contented, prosperous and happy people?

At the conclusion of Mr. Begg's address, President Robinson said:

I notice that Lieutenant Governor Jones has been an attentive listener today. As I think the members present would be glad to hear from him, I take the liberty of now calling upon Lieutenant Governor Jones.

Hon. Asahel W. Jones, Lieutenant Governor of Ohio, then said:

Mr. Chairman and Gentlemen: I want to assure you that this has been to me a most remarkably pleasant afternoon. I have enjoyed it perhaps as much as any one here and have sought as eagerly to grasp the words of wisdom that have come out of the mouths of these most excellent and eloquent lecturers. No man desires more than I to know the possibilities of agriculture in Ohio. Reared a farmer boy; at early manhood I went into a business life; later in my life I got back to the farm again, and I believe I can truly say that while we talk all the time about the farms not producing, and about farming not being a good avocation, if we will put the same energy and the same learning and the same skill and the same hard work into it that we do into a business life, we will get the results in the same way. I have noticed in my community that there are most all classes of farmers. There are men there that pursue a line of farming just as their fathers did seventy-five years ago, with the same routine, with the same skill, and the same order, and with just as little reason as they did seventy-five years ago, and they are getting a good deal less results. I do insist, and do believe, if we will simply undertake to do good farming in this country, not a class of farming that we do not know anything about, or that we merely guess at, we may look for better results.

Now, I want to say just a word more and I am not going to take your time tonight for I know that you do not want to hear from me; I am not going to give you a lecture on farming, because I know how slight my education is upon that subject. I was here this afternoon trying to absorb from you something in the way of useful knowledge. I know from a business life of thirty or forty years how many long hours and sleepless nights a man puts in, that undertakes to pursue a line of successful business. I know that today with that same energy and that same amount of work he can make farming successful. I want to say another thing. When I go over and look at my farm, and I am doing this or doing that, I have a great anxiety to know why I am doing it that way. I look at a field and I find it is not producing what it ought to produce and I say, "well, it must be fertilized," but how must it be fertilized, and why must it be fertilized, and what is it I want to put into that field? The ordinary farmer says put on manure or turn down clover or put on your bone dust with just as little knowledge of the reason why or what he is putting into that soil as ten thousand men who undertake to do a good many other things in this life and always fail. Now, I do believe that if there is anything in the world that wants to be driven into us it is investigation, study, care and attention so that we may be able to do better farming in this country, and when we have accomplished it, I want to know what more pleasant business there is in the world. I know in the practice of the law, for a good many years, I put in more hours than any farmer did and then I went to my bed and tried to sleep while, I will venture, my client was snoring like a good Berkshire, and I lay awake all night thinking how to get him out of trouble tomorrow. (Laughter and applause.) But so it is. I have found farming a 14-15 puzzle right straight along, but when you have accomplished it I want to know what more pleasant thing there is on earth. The brightest time that I have is when I go over to my farm and get on a checked shirt and stay at the farm and look over my stock and look over my growing crops, then I find that I am passing the most pleasant part of my existence. I do not know anything in the world that a man can look upon with more pleasure than a nice herd of cattle, or a nice lot of sheep, or a nice growing field of wheat, or corn or anything of that kind. At my time of life it is satisfaction and contentment that I am hunting for, and I am enjoying it with you today. I am sure that you will all profit by the many excellent addresses to which we have listened. I think one of the most important matters for us to consider and bring about is co-operation. We ought to stand together and protect our rights, and if we would stand together we would create our prices and somebody would come to our houses to ask what the prices were. I thank you. (Applause.)

President Robinson: I notice another gentleman in the audience today who has been an attentive listener. I refer to Senator J. L. Carpenter, and I am satisfied that the audience wants to hear from him. (Applause.)

Hon. J. L. Carpenter, of Meigs county: Mr. President, this audience has been detained so long and has had so many luxuries today that I do not think it is in very good condition to enjoy cold victuals, especially if they are poor food. I do not see that I can add anything to what has already been said. There have been bushels of good suggestions furnished us and the best thing to do would be for us to go home and put them into practice. Farmers who put in practice the suggestions which have been made to them today can not help but be practical and successful. This has been really an intellectual feast and everything that has been said has been worthy of action and consideration. I believe that these meetings are doing great good and I am glad to see so much interest taken in them. Now, I do not want to detain you longer for I know that all of you want to adjourn so that you may get back early for the evening session. I thank the President for the courtesy shown me in calling upon me to address you. (Applause)

President Robinson: Owing to the lateness of the hour and owing to the fact that the Chairman of the Committee on Resolutions is indisposed, at his hotel, we will not hear the report of that committee until we convene at 7 o'clock this evening.

On motion, duly seconded, the Convention then recessed until 7 o'clock P. M.

EVENING SESSION.

THURSDAY, January 13, 1898.

After the Convention was called to order by President Robinson, the report of the Committee on Resolutions was read by Mr. J. G. Russell, as follows:

Mr. President, we, your Committee on Resolutions, beg leave to submit the following:

No. 1.

WHEREAS, The legislature of Ohio has taken steps preliminary to the celebration by the state of the Centennial anniversary of its admission to the Union in 1803, and

WHEREAS, we heartily approve of such a project, and particularly desire the celebration of our wonderful progress in the mechanical arts and agricultural improvement, which success lies at the foundation of all improvements in material things in the history of the state, therefore, be it

Resolved, First—That we heartily favor the proposition of making an exposition of products of Ohio worthy of the rank of the state in power, wealth and culture.

Second—That we favor the establishment of the place of celebration of such Centennial near the center of the state in order that all may have, so far as possible, an equal opportunity of visiting the exposition, and that the transportation of exhibits and visitors may be attended with the least possible expense.

Third—That we recommend to the State Board of Agriculture the offer (by and with the authority of the General Assembly of the State) of the use of its beautiful park near the capital of the state, thus saving to the state several hundred thousand dollars, and making it possible to erect permanent structures for the future use and pleasure of all the people.

Fourth—That the United States Government should be asked to contribute in money and exhibits in a manner and to an extent commensurate with the rank which Ohio holds among her sister states.

No. 2.

WHEREAS, The agriculturists of the state recognize the crying need of a Department of Live Stock Industry in Ohio, it is, therefore,

Resolved, That we recommend to the General Assembly and urge the passage of a bill creating a Bureau of Animal Industry, to be established as near the advance line occupied by other states as possible, and as no men are in closer touch with the agricultural and stock breeding interests of the state than the State Board of Agriculture, we recommend that this Bureau be placed in charge of said Board, and

Resolved, That the power and authority now vested in the Live Stock Commission be transferred to the State Board of Agriculture, and that said Board shall have authority to appoint a State Veterinarian and necessary assistants and such other powers as may be deemed necessary to properly equip a Division of Animal Industry, and we recommend the repeal of the laws necessary to accomplish this result.

No. 3.

WHEREAS, This State Agricultural Convention, representing the various counties of Ohio and the County Boards of Agriculture, believes that the passage of the measure before Congress, known as the Anti Ticket Scalping Bill, is in the interest of public morals, and the proper conduct of a great public business, therefore, be it

Resolved, That we earnestly urge upon the Congress of the United States the prompt passage of said bill;

Resolved, That individual representatives in this Convention appeal directly to their respective Senators and Congressmen.

Resolved, That the Secretary of the State Board of Agriculture be instructed to send copies of these resolutions to the Committees of Congress having in charge the above bills, and also to send copies of them to the representatives of the press.

No. 4.

Resolved, That it is the sense of this Agricultural Convention that the present General Assembly should make adequate provision for keeping all fair ground property insured, the same as other property.

No. 5.

Resolved, That the farmers and stock raisers stand as a unit to support and fortify our Dairy and Food Commissioner.

We acknowledge the recognition of our interests in appointing one of our number as a special deputy to ferret out and prosecute all violators of the laws pertaining to our dairy products.

We respectfully request that in the prosecution of the cases that come under the care of this special deputy that he be given full authority and the substantial support of the Department, that violators of the law may be speedily convicted or acquitted, for, without the loyal support of the Department, his labors must be ineffectual and the ends of justice not meted out to those who would destroy the profitable production of our dairy products.

No. 6.

Resolved, That we urge our General Assembly to pass the bill prepared by the Ohio State Horticultural Society to stamp out the San Jose scale from our state. We also ask them to use their personal influence toward the passage of the National Bill for the same purpose.

A. H. KLING,
J. G. RUSSELL,
B. BEALL,
Committee.

President Robinson: You have heard the report of the Committee on Resolutions. What is your pleasure with reference to it?

Mr. Ganson, of Champaign county: I move that the resolutions be re-read and acted upon singly.

(Motion seconded.)

Assistant Secretary Fleming then read Resolution No. 1.

Mr. Ganson: I move the adoption of that resolution.

(Motion seconded.)

Resolution No. 1, as above read, was then adopted.

Assistant Secretary Fleming then read Resolution No. 2.

Mr. John Begg: I move the adoption of that resolution as read.

(Motion seconded.)

The resolution, as above read, was then adopted.

Assistant Secretary Fleming then read Resolution No. 3.

Mr. Tenney, of Miami county: Frequently resolutions are passed in meetings of this kind without proper consideration. Some one gets up and moves that the resolution be adopted. Some one seconds it and the vote is immediately called for and the resolution is adopted, whereas as a matter of fact but few of the members present know what the resolution is about or what they are voting upon. If we are expected to take concerted action in this way there is an element among us that would like to know what we are voting upon. I confess to you, Mr. President, that I am not well enough posted on this resolution, which is now pending, to vote upon it. I do not know what the law is which is referred to in this resolution. Therefore I do not know whether I am in favor of repealing the law or not. It seems to me that we ought to know what these matters are about, so that we can vote intelligently and be able to express our approval or disproval.

Mr. S. H. Ellis: There seems to be a misunderstanding in this part of the Senate chamber as to just what that resolution means; one claiming that it means one thing and others claiming that it means another thing. I, therefore, would like to have the resolution explained and also the nature of the law to which it refers.

Mr. J. W. Fleming: I expect the best way to explain the nature of the law to which it refers is to read to the Convention the bill referred to. The bill, together with the endorsements of other associations, and some other matters pertinent to the question were all submitted to the Committee on Resolutions before it embodied this resolution into the report.

Mr. Fleming then read the bill introduced in the Congress of the United States, which is referred to in this resolution, after which Mr. Tenney, of Miami county, said:

I feel more impressed than ever that to undertake to pass resolutions of that kind before a body like this one is a farce. I had little idea, what the resolution alluded to. I do not think very many of us have ever read this bill. We probably have seen notices of its presentation in Congress and probably some of us have read a little discussion in reference to it. But the bill is an intricate one and if brought up in this way, without having an opportunity to read it, or without having time to examine it, and to be asked to vote in favor of a resolution so that the action on our part may be sent out to the world as the concerted action of a Convention like this, looks to me like a farce. I do not know much about the bill. A gentleman who was opposed to the enactment of this law claimed to me that ninety per cent. of the scalpers' tickets that were sold were purchased directly from the roads and sold to the persons who use them, and who receive the benefit from them, and that not to exceed ten per cent. of scalpers' tickets were bought from persons who did not use all of them, at a discount, and to the disadvantage of the road issuing them. Knowing as little as I do about the merits or demerits of this contemplated legislation, I do not feel like voting either way upon such a resolution without having had more time to consider it. The committee probably have examined it thoroughly and were satisfied that the resolution should be adopted, but we as members of this convention are not satisfied, nor sufficiently informed, to vote intelligently upon the subject. I do not think that such a resolution onght to be brought up here for us to act upon so hastily. There are arguments in favor of this proposed legislation, and there are arguments against it, and to have it go through here unanimously without the majority of us knowing what we are voting upon is not, I think, the right course to be pursued.

Mr. C. H. Ganson: I move that the resolution be laid upon the table.

(Motion seconded.)

President Robinson: It is always in order to lay a resolution on the table and that motion is not debatable.

The motion above made and seconded was then carried, and Resolution No. 3 was laid upon the table.

Mr. Fleming then read Resolution No. 4.

On motion, duly seconded, Resolution No. 4 was adopted.

Upon the reading of Resolution No. 5 by Mr. Fleming, Mr. Tenney, of Miami county, moved its adoption.

(Motion seconded.)

Mr. S. H. Ellis, of Warren county: I have not been asked to say anything about it, but upon hearing that resolution read it seems to me it ought to be emphasized so that every member who votes will know just the importance of the matter he is voting upon. It was more than whispered about that when the present Dairy and Food Commissioner took his office it was thought that he had received his support mainly from persons who were not entirely in favor of enforcing the pure food laws of the state. That talk occurred to a more or less extent all over the state. The Dairy Association—I do not know its exact name—with its headquarters at Cleveland, Ohio, waited upon Mr. Blackburn to see if they could not induce him to more vigorously enforce the laws against the adulteration of dairy products. He told them to select their own man and that he would apppoint him as inspector to take charge of that special department. I think the Dairy and Food Department certainly deserves the hearty endorsement of this body for its action in that regard. He not only was perfectly willing and ready to enforce the law but he said to the dairymen, "Select your own man and I will clothe him with all the authority that my office possesses." Last week, up at Chagrin Falls, I met his deputy, there prosecuting a case for selling oleomargarine without having the name stamped on it, and the deputy was doing all in his power to procure a conviction. The dairymen selected Mr. L. P. Bailey, and Mr. Blackburn has clothed him with all the authority of his office. I thought that the members of this Convention ought to know that circumstance before voting upon this resolution. I think Mr. Blackburn deserves the endorsement of this Convention for the vigorous way in which he has sought to prevent adulteration.

Resolution No. 5 was then unanimously adopted.

Resolution No. 6 was then read, and upon motion being made, duly seconded, the same was adopted.

Mr. L. H. Pool, of Logan county: I think the second resolution was passed without due consideration, and, as I voted for it, I now move its reconsideration.

Mr. Calvert: I second the motion to reconsider the vote in reference to Resolution No. 2.

The motion to reconsider the vote in reference to Resolution No. 2, then carried.

Mr. Calvert: I move that Resolution No. 2 be laid on the table.

Mr. Pool, of Logan county: I second the motion, and in seconding that motion, I would say that I would like to have it explained a little further by somebody who thoroughly understands the reasons for it. I would like to have the Secretary of Agriculture, or somebody who thoroughly understands the object of the resolution, explain it to the Convention.

President Robinson, on suggestion of Secretary Miller, then called upon Senator Carpenter to comply with the request of Mr. Pool, in explaining the above resolution.

Senator Carpenter: Mr. President, I can not say that I am familiar with the resolution, and I do not know that I understand the full purport of its meaning. I take it, however, that I do know something with reference to it. I am told, and I believe it is true, that the laws of Ohio are absolutely inefficient to protect the live stock interests of the state of Ohio against contagious diseases. I do not know whether our quarantine laws are inefficient or not, but I take it that they are. I take it, however—and I ask any gentleman who is familiar with the subject to correct me if I am wrong—that if a contagious disease gets among our live stock, the present laws are inefficient in properly protecting stock. If it became necessary to kill live stock in order to save other live stock, by what authority would you do it under the present law? Is there any provision by which the state would pay for it? Now, I take it, that the resolution is at least harmless, and if these committees formulate a bill which comes before the legislature there would be abundant time to consider its various provisions and correct any abuses which might be embodied in it. It seems to me that this is one of the most important suggestions to the live stock industry of anything that has been brought before this Convention. I am not entirely familiar with it and hence I can not talk with the degree of intelligence about it that I would like. I have, however, long since been of the opinion that our laws were entirely inadequate to protect the live stock interests of our state and that cattle and other live stock might be brought into our state, from other states, which were infected with some contagious diseases, and thus our own stock become diseased and we be unable to prevent it. I do not think our present laws are sufficient. I repeat, however, that it is a subject which ought to be thoroughly investigated, and if those laws are not sufficient and adequate to properly protect us, then some such amendment as suggested in this resolution should be enacted into a law. It were much better that this resolution had not come here at all than for it to come before this Convention and be voted down, because if some member should introduce a bill on this line into the present legislature which would convince every one of you gentlemen that it ought to be enacted into a law, some one opposed to the legislation could come up and offer as an argument against its enactment the fact that the farmers of Ohio, in Convention assembled, voted that proposition down and voted not to even have it considered in the form of a resolution. If this measure is formulated into a bill, which comes before the present legislature, your action tonight will have great weight, either one way or the other. Hence, I think, if it is of any moment at all, we should be slow in voting it down so that it can not be said that the farmers of Ohio are arrayed against such protective measures as are sought to be enacted into law for the complete protection of their interests. (Applause.)

Prof. C. E. Thorne, of Wooster: I do not claim to understand this bill in all its various features, but there is one point which I think will be easily seen. This bill places the Live Stock Commission and the appointment of its veterinarian in the hands of the State Board of Agriculture, men who by their business are most familiar with the needs of the live stock interests of the state. It takes these appointments out of politics. It seems to me that there is an element of great usefulness in the proposition, and as yet I fail to see the seed of any harm. If there are any abuses apparent in the bill they can be corrected when it comes before the General Assembly for its action.

Mr. L. H. Pool, of Logan county: Those are exactly the sentiments which I wish to express. We all have confidence in our State Board of Agriculture. We all know our present Secretary is a man in whom we have the fullest confidence, and I think this subject could not be placed in better hands than to place it in charge of the State Board of Agriculture. I know nothing of the personality nor the powers of the Live Stock Commission, but this discussion has certainly been the means of enlightening us materially as to the matter about which we were, before, voting in the dark.

Mr. Chamberlain: It looked to me when we were about to resolve on railway matters and anti-scalping bills that we were outside of the limit of our authority. I did not, however, say anything about it at the time, having no vote. I thought it, however, eminently proper that we should not take decisive action on that question, because it was a very complicated matter which we could not understand or properly study in so short a time. But if there is one thing on earth that we ought to be competent to vote upon, it is with reference to the protection of our live stock interests. I know personally that our present laws are wholly inadequate, and if this Convention can not act in favor of adequate legislation on that subject, I do not know of any convention in Ohio, or on earth, that can do it. It seems to me as my friend, Mr. Carpenter, said there is no risk to be taken by us in this matter. It is going to be referred to the Committee on Agriculture of the General Assembly and it will come right down to the State Board of Agriculture. We have men as members of that Board and a Secretary whom we can all trust, and it seems to me by all means, gentlemen, that we ought to pass this resolution. As Mr. Carpenter has said, if we were to table it now, it would kill the whole business.

Mr. W. I. Tenney, of Miami county: I think we have succeeded in doing just what I wanted to have done, and that is have these matters explained to us so that we could vote understandingly. I am glad that the matter has been reconsidered and brought before the Convention the second time and I am glad we have received the explanations in regard to this proposed legislation which have been given. I confess to you, from the reading of that resolution, that I had no idea whatever of its purport until the explanation has been made by my friend to my right. I did not know anything about the inefficiency of our present laws in protecting us from disease to live stock. I know that by some means or other, whether under the present law or not, a veterinarian is sent out by somebody to examine diseased animals, and when they are found to have contagious diseases among them he assumes to have the authority to destroy those animals. They have done it close to the city of Troy. I am perfectly willing that this law should be amended, as suggested, and allow the State Board of Agriculture to have supervision over this matter. I am perfectly willing that the resolution should pass now that it has been explained. In fact, I am in favor of its passage, but, when it was voted upon before, I do not think hardly any of us knew what we were voting upon. Therefore, I say, I think we ought to understand what these matters are that we are called upon to approve or disapprove.

Mr. T. S. Calvert, of Clark county: I will withdraw my motion to lay upon the table, with the consent of my second.

. Mr. Pool, of Logan county: I consent to the withdrawal of the motion as the person seconding it. I want to explain the purpose of my motion to reconsider. Not that I was opposed to the resolution, but I did not think that it was properly understood. There was a very light vote when the resolution passed the Convention. It was a matter which I did not think was fully understood, and I am free to confess that I had an entirely different idea of it from the one I now have since it has been explained. That is the reason I made the motion to reconsider. I now understand the purport of the resolution and am in favor of its passage.

It was then moved and seconded that Resolution No. 2 be adopted. (Motion carried unanimously.)

Senator Carpenter: Mr. President, I was forcibly impressed with the remarks of the gentleman to my right, (Tenney) whose name I hope to learn before this Convention concludes. I thought his talk was very sensible about the propriety of adopting resolutions, or voting them down, which we did not understand anything about. I have been trying to think of some way to obviate that trouble in the future, and I want to bring the matter before the convention at this time. If I am not out of order, I move that when the State Board of Agriculture is reorganized that the President thereof, or the Board in its official capacity, appoint a Committee on Resolutions whose duty it shall be to prepare resolutions for the next annual meeting and have them printed, in order that they may be laid upon the desks of the members of this Covention when they assemble, so that they will have an opportunity to study them before they are called upon to vote upon the resolutions. I make that as a motion. (Motion seconded.)

Senator Carpenter: The Board can take such action as it chooses under this motion. The President could appoint that committee, making it large or small as deemed proper. It could convene at some time prior to the next annual meeting. At any rate it should be appointed as early as possible, and names and addresses published, so that any member of the coming annual convention who had ideas on any subject, which he desired to forward as resolutions, could forward them to this committee for its consideration. Then the committee could get together and prepare such resolutions, as it deemed proper to bring before this body and, as I have suggested, the Secretary of the State Board of Agriculture could have those resolutions, or such as the committee deemed proper to offer, printed for our inspection and examination when we come here, so that we would then be able to vote with a higher degree of intelligence and knowledge.

Secretary Miller: I would like to say a word in relation to that. I believe that it is a very fine theory if it were susceptible of being put into practice. I believe, however, that is not the case if I properly understand the Senator. These resolutions, I have no doubt, every one of them, have emanated from delegates in attendance today and have only be n handed to the committee today. I have no doubt that the Committee on Resolutions will support me in that statement, that these resolutions have not been in the possession of the State Board of Agriculture at all, but have been handed to the committee by the delegates of this Convention.

These resolutions have not in any sense emanated from the State Board. If it were possible to have all the people who might attend this Convention in contact with the State Board of Agriculture, or with the committee of the State Board of Agriculture, and to have those various resolutions placed before that committee and printed for presentation to the Convention on its assembling, I think it would be a very excellent idea. However, do you think it is practicable?

Senator Carpenter: Possibly the Secretary did not understand the meaning of my motion. My motion was intended to convey—whether I said it or not—that the State Board of Agriculture should appoint a Committee on Resolutions, consisting of delegates to the coming Convention. It does not necessarily have to be a committee from the State Board of Agriculture, and indeed, I presume, it would not be. When those resolutions are submitted to that committee, and when they have formulated such resolutions as are to be presented, then let the committee present those resolutions to the Secretary and let the Secretary get them printed at the expense of the Board. That is what I mean. I did not mean for a moment that the resolutions should emanate from the State Board. I take it that these resolutions came before us just as he has suggested; that such delegates as desired to present resolutions have handed them to the committee, and the committee has embodied into its report such resolutions as it deemed proper to bring before the Convention for its action. The object of my motion was that each member of the Convention should forward any resolution, which he might wish to offer, to this committee, then let that committee take up the whole mass of resolutions, digest them, and present such resolutions as it would deem proper. It would not prevent anybody from offering additional resolutions in the Convention, but it would simplify the matter and bring it before us in better form to have those resolutions printed, as I have suggested, and presented in that way. The State Board of Agriculture, after appointing that committee, would have nothing further to do with it except to print the resolutions presented by the committee.

Secretary Miller: I want to acknowledge to the Senator that I did misunderstand entirely the scope of his resolution. I certainly see no objection to the course which he has suggested. I misunderstood the Senator and thought that he referred to a committee of the State Board of Agriculture, and that the Board should formulate and present such resolutions. I understand the Senator fully, now, and can see no possible objection to the method that he has suggested.

Senator Carpenter: The committee is simply to be the means through which the resolutions are to be presented to the Convention. In brief, my motion is that the State Board of Agriculture when it organizes, as it will tonight after the election, appoint a Committee on Resolutions. It shall be the judge as to the number to be selected on that Committee on Resolutions. It will be the duty of that committee to gather in such resolutions as may be desired to be offered at our next annual meeting, and when those resolutions are presented to that committee, at such time as it can agree upon, prior to the annual meeting, then it shall be the duty of that committee to formulate those resolutions, or such of them as it deems proper to have presented to the Convention, and hand them to the Secretary of the State Board of Agriculture, who will have them printed and distribute them upon the desks of the members, in order that they may have them when they come to the annual Convention. In the mean time, the committee, thus appointed by the State Board, can be announced in such a way that all persons throughout the state may know who constitute the committee. Then any member of the Convention desiring to present resolutions can submit such resolutions to the committee, and that committee will formulate those resolutions and recommend such as they desire to have presented to the Convention.

The motion of Senator Carpenter, above made, and duly seconded, was then unanimously adopted.

Mr. L. R. Dunham, Cuyahoga county: We have a Committee on Resolutions, as I understand, and I would like to ask if that committee has presented all of the resolutions that have been handed to it, and if not, why not.

Dr. Chamberlain: The Committee on Resolutions always receives whatever resolutions may be submitted to it, but decides for itself what will be presented to the body.

Mr. J. G. Russell: That is just what your committee did in the present instance.

President Robinson: The next thing in order is the election of five members of the State Board of Agriculture. I will appoint as tellers, G. W. Carey, of Warren county, and Dr. A. L. Paul, of Putnam county.

Secretary Miller: I would explain that printed tickets have been distributed throughout the Convention, containing eight names of gentlemen placed in nomination this morning; each delegate is entitled to five votes, or to vote for five individuals, and he may do so by striking off the names of the three for whom he does not choose to vote, thus leaving on the five for whom he wishes to vote. A ticket containing eight names could not be counted; a ticket with six names could not be counted; a ticket containing five names or any number less than five—if you don't choose to vote for the five—would be a valid ticket. After the election, if the representatives of the different societies will come forward, I will deliver their certificates to them.

The Convention then proceeded to the election of five menbers to the State Board of Agriculture, which election resulted as follows, as announced by the Secretary:

Mr. Miller: Necessary to a choice, 38. We have six candidates who have received more than a majority and under the rule adopted this morning the five receiving the highest number of votes and a majority of all are to be declared elected.

The vote stands as follows:

L. G. Ely	Fulton county	66
H. S. Grimes	Scioto county	66
J. T. Robinson	Seneca county	44
G. Liggett	Union county	67
Albert Hale	Summit county	51
S. H. Ellis	Warren county	51
B. B. Herrick	Lorain connty	9
A. C. Williams	Huron county	14

According to the rule adopted this morning, Mr. G. Liggett, having received sixty-seven votes, which is the highest number cast, is elected to the four-year term; Messrs. L. G. Ely and H. S. Grimes, having received sixty-six votes each, and being the next highest, are elected for the three-year term; and Messrs. Albert Hale and S. H. Ellis, having received the next highest number of votes cast, to wit, fifty-one, each, are elected for the two-year term.

Mr. Robinson, you will observe, has a majority of all votes cast, but has a less number than the other five whom I have just named.

Mr. G. Liggett was then declared elected as member of the State Board of Agriculture for the term of four years.

Messrs. L. G. Ely and H. S. Grimes were declared elected as members of the State Board of Agriculture for the term of three years.

Messrs. Albert Hale and S. H. Ellis were declared elected as members of the State Board of Agriculture for the term of two years.

On motion duly seconded, the Fifty-third Annual State Agricultural Convention then adjourned *sine die.*

EIGHTH ANNUAL REPORT

OF

FARMERS' INSTITUTES

HELD IN OHIO IN 1897-98,

UNDER THE AUSPICES OF THE

Ohio State Board of Agriculture,

AND

Proceedings of the State Farmers' Institute,
Held in Columbus, January
11 and 12, 1898.

EIGHTH ANNUAL REPORT

OF

FARMERS' INSTITUTES

Held in Ohio During the Winter
of 1897–1898.

The Farmers' Institute season of 1897–1898 began Monday, November 29, 1897, and closed Saturday, March 5, 1898, making fourteen weeks of Institute work, with either six or seven circuits in operation all the time, except one week in January, when the State Farmers' Institute was held in Columbus and no county Institutes were held. During this "Institute season" there were held under the immediate auspices of the State Board of Agriculture one State Farmers' Institute and two hundred and thirty-four regular County Institutes; and during the same period many independent Institutes were held, of which twenty-nine made formal reports.

The State Board of Agriculture carefully considered every request filed with the Secretary for the establishment of Institutes and the appointment and assignment of speakers; and, after full investigation of all reports, petitions and requests, the Board directed the establishment of the two hundred and thirty-four Institutes, which were later held in the eighty-eight counties of the State, and appointed the thirty-seven lecturers who served the Board.

The Farmers' Institutes in the State are improving annually in attendance, interest and valuable work accomplished. Petitions praying for the recognition of additional Institutes, to be conducted under the control and management of the Board, are being received by the Secretary in increasing numbers; these are all being filed for the consideration of the Board at a meeting to be held for that purpose in September next.

The Board feels satisfied that the maximum number of Institutes held in a season has not yet been reached and it hopes to considerably increase the number next winter, believing that by this means an increasing amount of good will be accomplished for the agriculturists of the State. The State Institute held in the city of Columbus, January 11–12 last, was most satisfactory and successful in every respect; it had a considerably larger attendance of progressive farmers from all parts of the State than any State Institute previously held, together with almost the entire force of Institute lecturers in the employ of the Board, and the interest manifested was all that the Board and the many friends of the Institute could desire.

Agreeable to the provisions of section 6 of the "Law governing Farmers' Institute Societies in Ohio," the Board publishes herewith "such lectures and papers delivered at the several Institute meetings as may seem of general interest and importance to the farmers, stock breeders and horticulturists of the State," and "a detailed statement of its receipts under the provisions of this act and the disbursements on account of Institute work."

State and local speakers responded to the request of the Board to have papers forwarded to the Secretary for reference to the publication committee for approval with a view to publication, and the result was that very many meritorious manuscripts were received that could not possibly be used because of lack of space in this pamphlet.

The Board feels greatly encouraged by its success in the Farmers' Institute field and is disposed to continue its efforts in the enlargement and improvement of the good work.

By direction of the State Board of Agriculture.

WELLS W. MILLER,
Secretary.

COLUMBUS, O., April 1, 1898.

FINANCIAL STATEMENT.

The following statement shows the receipts and disbursements of the Ohio State Board of Agriculture on account of Farmers' Institutes, for the season of 1897–1898, held under the law passed April 26, 1890, and amended April 27, 1896.

RECEIPTS.

Amounts collected from the counties on the basis of three mills per capita, being the State Board's proportion of the six mills per capita allowance provided by the law for the maintenance and support of County Institute societies in Ohio:

Adams County	$78 27
Allen County	121 93
Ashland County	66 66
Ashtabula County	125 00
Athens County	105 58
Auglaize County	84 30
Belmont County	125 00
Brown County	89 69
Butler County	125 00
Carroll County	52 69
Champaign County	80 94
Clark County	125 00
Clermont County	100 65
Clinton County	72 72
Columbiana County	125 00
Coshocton County	80 10
Crawford County	95 78
Cuyahoga County	125 00
Darke County	125 00
Defiance County	77 30
Delaware County	81 56
Erie County	106 38
Fairfield County	101 81
Fayette County	66 92
Franklin County	125 00
Fulton County	66 06
Gallia County	81 01
Geauga County	40 46
Greene County	89 46
Guernsey County	85 92
Hamilton County	125 00
Hancock County	125 00
Hardin County	86 81
Harrison County	62 49
Henry County	75 24
Highland County	87 14
Hocking County	67 97
Holmes County	63 41
Huron County	95 84

Jackson County	$85	22
Jefferson County	118	24
Knox County	82	80
Lake County	54	70
Lawrence County	118	66
Licking County	125	00
Logan County	82	15
Lorain County	120	88
Lucas County	125	00
Madison County	60	17
Mahoning County	125	00
Marion County	74	18
Medina County	65	22
Meigs County, allowance $89.43, interest 90	90	33
Mercer County	81	66
Miami County	119	26
Monroe County	75	52
Montgomery County	125	00
Morgan County	57	42
Morrow County	54	36
Muskingum County	125	00
Noble County	62	25
Ottawa County	65	92
Paulding County	77	79
Perry County	93	45
Pickaway County	80	87
Pike County	52	44
Portage County	83	60
Preble County	70	26
Putnam County	90	56
Richland County	114	21
Ross County	118	36
Sandusky County	91	85
Scioto County	106	13
Seneca County	122	60
Shelby County	74	12
Stark County	125	00
Summit County	125	00
Trumbull County	125	00
Tuscarawas County	125	00
Union County	68	58
Van Wert County	89	01
Vinton County	48	13
Warren County	76	40
Washington County	125	00
Wayne County	117	01
Williams County	74	69
Wood County	125	00
Wyandot County	65	16
Total	$8,174	25

DISBURSEMENTS.

For per diem and expense of lecturers, as follows:

Begg, John, Columbus Grove, six weeks	$283 01
Bradfute, O. E., Cedarville, four weeks	170 52
Brown, B. H., Oxford, two weeks	91 15
Burkett, C. W., Columbus, (no per diem) two weeks	30 91
Cowden, W. N., Quaker City, five weeks and four days	284 27
Derthick, F. A., Mantua, ten weeks and four days	485 23
Dobie, J. Al., Gutman, two weeks and four days	112 85
Elliott, E. E., Morning Sun, five weeks and four days	268 46
Ellis, S. H., Springboro, nine weeks and four days	468 40
Farnsworth, W. W., Waterville, seven weeks and four days	350 44
Freeman, C. M., Rex., four weeks and four days	255 30
Gibbs, W. D., Columbus, (no per diem) one week and four days	30 36
Gould, John, Aurora Station, six weeks	295 23
Green, W. J., Wooster, (no per diem) two weeks	33 65
Greene, J. F., Sandusky, nine weeks	428 39
Hickman, J. F., Wooster, (no per diem) two weeks	47 95
Housekeeper, G. C., Bowling Green, two weeks	89 79
Kellerman, W. A., Columbus, (no per diem) three weeks	46 90
Laylin, T. C., Norwalk, five weeks and four days	281 25
Lazenby, W. R., Columbus, (no per diem) two weeks	29 85
Longenecker, T. F., Dayton, four weeks and four days	229 20
McLaughlin, S. K., Hurford, three weeks and four days	203 72
McNeal, F. B., Alcony, three weeks and four days	200 68
Miller, T. J., Leipsic, two weeks	98 08
Morris, M. C., Shandon, two weeks	96 80
Roudebush, J. L., Stonelick, five weeks	244 51
Scott, Geo. E., Mt. Pleasant, six weeks	300 05
Selby, A. D., Wooster, (no per diem) two weeks	43 31
Shawver, J. L., Bellefontaine, five weeks	246 15
Thorne, C. E., Wooster, (no per diem) two weeks	38 00
Todd, M. I., Wakeman, two weeks	89 10
Todd, S. H., Wakeman, six weeks	279 87
Webster, F. M., Wooster, (no per diem) two weeks	43 20
White, A. L., Norwich, two weeks	87 25
White, D. S., Columbus, (no per diem) one week	23 00
Williams, C. G., Gustavus, eight weeks	410 00
Wing, J. E., Mechanicsburg, four weeks and one day	201 52
Canfield, James H., Columbus, (no der diem) two days	11 45
Wallace, R. H., Chillicothe, one week and two days	75 79
Total	$7,005 59

MISCELLANEOUS.

For expenses of lecturers, reporting, printing, etc., for State Farmers' Institute, held at Columbus, January 11-12	193 07
On account of preparing report for printer, job printing, postage, express, etc	975 59
Total	$8,174 25

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING NOV. 29, 1897, AND ENDING MARCH 5, 1898.

Counties.	Population.	Institutes held.		Attendance reported.	Local expense reported by society.	Per capita allowance to institute societies under the institute law.
		Where.	When.			
Adams	26,093	Cherryfork	February 2-3	400	$29 90	$78 27
Allen	40,644	Spencerville	December 8-9	350	16 65	121 93
		Beaverdam	December 29-30	400	38 35	
		Harrod	February 23-24	450	40 00	
Ashland	22,223	Loudonville	December 1-2	255	29 05	66 66
		Polk	January 28-29	500	33 33	
Ashtabula	43,655	Geneva	November 29-30	200	40 03	125 00
		Andover	December 1-2	350	26 85	
		Jefferson	December 31-January 1	100	27 25	
Athens	35,194	Coolville	November 29-30	250	21 12	105 58
		Amesville	December 15-16	207	21 00	
		Athens	December 27-28	175	23 25	
		Lee	January 24-25	300	23 00	
Auglaize	28,100	Buckland	December 31-January 1	300	21 75	84 30
		Kossuth	January 28-29	250	26 30	
		Cridersville	February 25-26	450	33 11	
Belmont	57,413	Barnesville	December 20-21	400	53 95	125 00
		Colerain	December 22-23	450	70 78	
Brown	29,899	Hamersville	November 29-30	205	27 00	89 69
		Russellville	December 31-January 1	150	29 70	
		Union Plains	March 2-3	340	29 89	
Butler	48 597	Sevenmile	December 17-18	200	29 39	125 00
		Ross	January 19-20	280	29 00	
		Monroe	February 11-12	275	32 41	
		Oxford	March 4-5	500	28 18	
Carroll	17,566	Carrollton	January 3-4	800	43 00	52 69
Champaign	26,980	King's Creek	December 29-30	400	23 22	80 94
		Westville	February 18-19	400	27 56	
		Mingo	February 28-March 1	400	26 30	

Clark	52,277	South Charleston	December 8-9	300	20 21	125 00
		New Carlisle	January 28-29	250	30 75	
		Catawba	February 7-8	350	28 80	
		Enon	February 16-17	350	20 85	
Clermont	33,553	Mt. Carmel	December 1-2	125	16 18	100 65
		Mulberry	January 17-18	450	25 16	
		Bethel	February 7-8	443	38 68	
		Amelia	February 28-March 1	425	25 50	
Clinton	24,240	Blanchester	January 3-4	450	27 75	72 72
		Wilmington	March 2-3	650	39 75	
Columbiana	59,029	Leetonia	December 10-11	300	52 00	125 00
		Lisbon	January 3-4	750	42 50	
		New Waterford	February 14-15	300	20 90	
Coshocton	26,703	Plainfield	December 8-9	300	26 70	80 10
		Keene	February 4-5	290	26 70	
		Warsaw	February 16-17	400	24 95	
Crawford	31,927	Galion	January 5-6	350	31 92	95 78
		New Washington	January 28-29	800	23 50	
		Bucyrus	February 9-10	350	31 92	
Cuyahoga	309,970	Strongsville	December 1-2	200	26 12	125 00
		Chagrin Falls	January 5-6	350	31 25	
		Euclid	February 23-24	350	37 98	
		Dover	February 25-26	600	21 70	
Darke	42,961	Greenville	December 13-14	190	36 15	125 00
		Versailles	January 24-25	700	21 38	
		Arcanum	February 11-12	400	25 34	
Defiance	25,769	Defiance	December 1-2	450	24 36	77 30
		Hicksville	January 31-February 1	327	38 65	
Delaware	27,189	Sunbury	December 15-16	400	36 00	81 56
		Delaware	February 2-3	250	40 78	
Erie	35,462	Berlin Heights	December 6-7	300	33 70	106 38
		Castalia	January 17-18	500	35 46	
		Milan	February 18-19	700	35 25	
Fairfield	33,939	Carroll	December 17-18	200	19 60	101 81
		Pleasantville	January 19-20	400	35 85	
		Amanda	February 14-15	500	33 90	
Fayette	22,309	Bloomingburg	December 6-7	200	23 50	66 92
		New Martinsburg	January 5-6	250	11 60	
Franklin	124,087	Grove City	December 13-14	100	19 35	125 00
		Groveport	January 17-18	450	35 91	
		Westerville	February 4-5	240	20 75	
Fulton	22,023	Wauseon	January 26-27	500	20 25	66 05
		Delta	March 4-5	500	25 25	
Gallia	27,005	Clipper Mills	December 10-11	400	12 50	81 01
		Rio Grande	December 20-21	275	18 95	
Geauga	13 489	Burton	February 21-22	400	29 00	40 46
Greene	29,820	Xenia	December 10-11	500	92 00	89 46
		Cedarville	January 24-25	800	42 00	
		Jamestown	February 28-March 1	500	29 82	
Guernsey	28,645	Cambridge	December 17-18	200	42 96	85 92
		Quaker City	February 4-5	321	40 35	

FARMERS' INSTITUTES, ETC.—Continued.

Counties.	Population.	Institutes held.		Attendance reported.	Local expense reported by society.	Per capita allowance to institute societies under the institute law.
		Where.	When.			
Hamilton	371,573	Cleves	December 20-21	300	$31 19	$125 00
		Blueash	December 22-23	285	31 25	
		Newtown	February 9-10	350	31 25	
		Mt. Healthy	February 25-26	300	31 25	
Hancock	42,563	Mt. Blanchard	December 27-28	450	31 25	125 00
		McComb	January 19-20	250	30 68	
		Arcadia	February 9-10	400	31 25	
		Benton Ridge	February 18-19	400	31 40	
Hardin	28,939	Ada	January 19-20	700	39 70	86 81
		Forest	February 16-17	350	36 40	
Harrison	20,830	Freeport	December 27-28	700	60 00	62 49
		Cadiz	February 9-10	400	111 41	
Henry	25,080	McClure	January 17-18	300	16 48	75 24
		Deshler	January 21-22	98	33 40	
		Ridgeville Corners	February 28-March 1	215	25 08	
Highland	29,048	Rainsboro	December 29-30	500	32 50	87 14
		Mowrystown	February 4-5	375	29 00	
		Hillsboro	March 4-5	400	27 14	
Hocking	22,658	Logan	December 22-23	300	33 98	67 97
		Laurelville	February 16-17	350	26 00	
Holmes	21 139	Killbuck	December 3-4	400	22 40	63 41
		Millersburg	February 2-3	250	20 75	
Huron	31,949	North Fairfield	December 20-21	150	30 12	95 84
		New London	January 26-27	500	30 00	
		East Townsend	February 23-24	500	31 62	
Jackson	28,408	Camba	December 6-7	150	15 50	85 22
Jefferson	39,415	Mt. Pleasant	December 29-30	400	51 80	118 24
		Richmond	December 31-January 1	450	47 90	
		Smithfield	February 7-8	300	40 00	
Knox	27,600	Danville	December 17-18	250	19 29	82 80
		Mt. Vernon	January 24-25	275	27 60	
		Centerburg	February 18-19	400	27 25	

Lake	18,235	Willoughby	November 29-30	200	27 35	54 70
		Painesville	January 3-4	400	27 35	
Lawrence	39,556	Rockwood	December 8-9	175	11 75	118 66
Licking	43,279	Granville	January 21-22	350	31 25	125 00
		Jersey	January 31, February 1	250	49 37	
		Brownsville	February 9-10	300	28 45	
		Utica	February 21-22	180	30 80	
Logan	27,386	West Mansfield	December 31-January 1	250	20 22	82 15
		Bellefontaine	January 28-29	600	27 15	
		DeGraff	February 25-26	400	27 38	
Lorain	40,295	Wellington	December 3-4	260	39 76	120 88
		North Ridgeville	January 7-8	325	40 20	
		Copopa	January 21-25	250	22 35	
Lucas	102,296	Waterville	December 10-11	190	25 20	125 00
		Sylvania	January 24-25	250	25 00	
Madison	20,057	London	January 26-27	500	30 08	60 17
		Plain City	February 2-3	400	30 00	
Mahoning	55,979	Canfield	December 27-28	317	27 05	125 00
		North Lima	January 17-18	500	37 00	
		North Jackson	February 16-17	275	33 65	
Marion	24,727	Marion	January 3 4	600	37 52	74 18
		Caledonia	January 31, February 1	500	24 00	
		Waldo	March 4-5	800	16 00	
Medina	21,742	Chatham	December 17-18	250	22 35	65 22
		Brunswick	February 25-26	400	11 50	
		Seville	March 4-5	400	21 35	
Meigs	29,813	Dyesville	December 1-2	400	27 60	89 43
		Chester	December 17-18	300	27 50	
Mercer	27,220	Fort Recovery	December 10-11	400	20 65	81 66
		Rockford	January 3-4	148	28 50	
		Wabash	January 24-25	250	18 92	
Miami	39,754	West Charleston	December 27-28	450	25 35	119 26
		Covington	February 9-10	600	38 50	
		Piqua	February 21-22	500	47 20	
Monroe	25,175	Woodsfield	December 13-14	150	33 00	75 52
		Beallsville	February 2-3	200	37 76	
Montgomery	100,852	Vandalia	February 14-15	300	42 00	125 00
		Centerville	February 21-22	600	40 67	
		Germantown	February 28 March 1	300	33 61	
Morgan	19,143	Chesterhill	December 29-30	500	24 12	57 42
Morrow	18,120	Marengo	January 7-8	150	16 00	54 36
		Iberia	February 11-12	350	16 81	
Muskingum	51,210	Chandlersville	December 10-11	600	31 25	125 00
		Fultonham	January 28-29	400	30 27	
		Dresden	February 7-8	450	31 25	
		New Concord	February 14-15	500	46 25	
Noble	20,753	Caldwell	December 15-16	175	31 00	62 25
		Summerfield	January 31, February 1	300	33 61	
Ottawa	21,974	Gypsum	December 8-9	300	32 96	65 92
		Oakharbor	February 14-15	300	32 92	
Paulding	25 932	Antwerp	January 7-8	200	25 93	77 79
		Payne	February 2-3	300	26 55	
		Oakwood	February 4-5	300	17 37	

FARMERS' INSTITUTES, ETC—Concluded.

Counties.	Population.	Institutes held.		Attendance reported.	Local expense reported by society.	Per capita allowance to institute societies under the institute law.
		Where.	When.			
Perry	31.151	Rehoboth	December 20-21	500	$29 00	$93 45
		Sayre	January 26-27	300	29 10	
		Thornville	February 11-12	400	31 15	
Pickaway	26,959	Ashville	December 15-16	500	28 00	80 87
		New Holland	January 7-8	400	26 95	
		Tarlton	March 4-5	300	35 00	
Pike	17,482	Idaho	December 27-28	200	12 40	52 44
		Piketon	January 17-18	140	10 45	
Portage	27.868	Mantua Station	December 6-7	200	15 50	83 60
		Edinburg	January 7-8	400	20 90	
		Garrettsville	January 21-22	350	23 97	
		Randolph	February 28-March 1	236	8 70	
Preble	23.421	New Paris	December 15-16	450	38 83	70 26
		Camden	March 2-3	600	35 13	
Putnam	30.188	Continental	December 6-7	550	25 45	90 56
		Columbus Grove	January 21-22	500	30 18	
		Leipsic	February 7-8	600	43 25	
Richland	38,072	Lucas	November 29-30	150	25 46	114 21
		Adario	December 22-23	400	28 55	
		Lexington	January 26-27	500	19 81	
		Butler	February 23-24	390	16 45	
Ross	39,454	Kingston	January 14-15	300	49 50	118 36
		Frankfort	February 18-19	300	34 65	
Sandusky	30,617	Clyde	January 19-20	650	45 92	91 85
		Fremont	February 16-17	1,200	80 00	
Scioto	35,377	Scioto	January 19-20	100	30 95	106 13
		Haverhill	January 21-22	160	18 85	
		Mt. Joy	January 31-February 1	150	15 00	
Seneca	40,869	Tiffin	January 21-22	600	50 00	122 60
		Bloomville	February 7-8	380	35 45	
		Greenspring	February 21-22	500	38 70	

Shelby	24,707	Jackson Center	January 26-27	325	26 90	74 12
		Sidney	February 23-24	175	23 00	
Stark	84,170	Marlboro	December 8-9	485	31 10	125 00
		Canal Fulton	December 22-23	150	18 00	
		Alliance	January 5-6	*	*	
		New Berlin	March 2-3	300	25 00	
Summit	54,089	Osborn Corners	December 13-14	400	52 45	125 00
		North Springfield	January 5-6	260	35 00	
Trumbull	42,373	Girard	December 3-4	275	29 00	125 00
		Hartford	December 29-30	350	27 09	
		Newton Falls	January 19-20	500	30 60	
		Kinsman	February 18-19	400	31 00	
Tuscarawas	46,618	New Philadelphia	December 6-7	220	38 45	125 00
		Mineralpoint	January 7-8	150	36 00	
		Gnadenhutten	February 11-12	300	36 25	
Union	22,860	Marysville	February 4-5	500	35 00	68 58
		Richwood	March 2-3	600	23 50	
Van Wert	29,671	Van Wert	January 5-6	300	27 35	89 01
		Ohio City	January 26-27	300	22 07	
		Convoy	February 21-22	500	25 00	
Vinton	16,045	New Plymouth	December 3-4	180	9 67	48 13
		Wilkesville	December 22-23	350	22 45	
Warren	25,468	Waynesville	December 3-4	400	25 45	76 40
		Franklin	January 21-22	300	25 53	
		Lebanon	February 23-24	500	33 00	
Washington	42,380	Barlow	December 13-14	450	62 00	125 00
		Watertown	December 31, January 1	350	39 63	
Wayne	39 005	Creston	December 15-16	400	25 25	117 01
		Shreve	December 20-21	300	30 00	
		Wooster	January 31, February 1	400	34 00	
		Lattasburg	February 25-26	500	30 00	
Williams	24,897	Bryan	November 29-30	95	28 75	74 69
		Montpelier	January 28-29	600	21 00	
Wood	44,392	Bloomdale	January 21-22	200	29 00	125 00
		Bowling Green	February 11-12	300	16 21	
		Grand Rapids	March 2-3	316	37 50	
Wyandot	21 722	Upper Sandusky	January 17-18	600	28 00	65 16
		Nevada	February 14-15	600	27 00	
Totals				85,953	$7,109 62	$8,173 35

*Not reported by Secretary.

INDEPENDENT INSTITUTES.

Counties.	Institutes held.		Attendance reported.	Local expenses reported by society.
	Where.	When.		
Allen	Bluffton	January 28-29	500	$32 00
Ashland	Savannah	December 31—January 1	375	44 10
Ashtabula	Ashtabula	January 20-21	250	50 63
Belmont	Belmont	February 4-5	350	53 00
Brown	Decatur	January 26-27	400	42 50
Champaign	Mechanicsburg	January 26-27	600	34 00
Clark	Springfield	March 16-17	88	47 80
Clermont	Williamsburg	February 14-15	500	30 05
Columbiana	Columbiana	December 17-18	350	39 55
Fayette	New Martinsburg	March 17	250	11 95
Hamilton	Plainville	March 19	190	15 00
Huron	Wakeman	January 14-15	125	15 00
	Monroeville	February 2-3	240	39 05
Knox	Fredericktown	February 25-26	450	14 00
Lake	Madison	February 22-23	450	41 10
Lucas	Maumee	February 4-5	250	20 00
Madison	West Jefferson	February 11-12	250	25 50
Medina	Poe	December 10-11	300	6 00
	Mallet Creek	January 7-8	300	38 00
	Whittlesey	January 20	100	12 00
Mercer	Neptune	February 4-5	350	52 00
	Mendon	February 11-12	400	29 00
Montgomery	Trotwood	March 2	400	26 30
Morrow	Sparta	February 4-5	300	11 00
Muskingum	Norwich	December 8-9	350	37 50
	Frazeysburg	February 2-3	200	66 15
Preble	Lewisburg	February 18-19	350	42 00
Summit	Manchester	March 8-9	400	33 55
Tuscarawas	Schoenbrun	February 26	300	20 50
Totals			9,368	$929 23

RECAPITULATION.

1.	Amount collected by the State Board of Agriculture from the three mills per capita tax, from the eighty-eight (88) counties, of the state, in all of which institutes were held	$8,174 25
2.	Amount allowable to two hundred and thirty-four (234) institute societies from the three mills per capita tax, from the eighty-eight (88) counties of the state, in all of which institutes were held	$8,173 35
3.	Amount expended by the State Board of Agriculture in aid of two hundred and thirty-four (234) county institutes for lecturers	$7,005 59
4.	Amount expended by county societies for expenses of two hundred and thirty-three (233) institutes reported—one not reported	$7,109 62
5.	Total expenses for two hundred and thirty-four (234) institutes	$14,115 21
6.	Average expenditure, per institute, by the State Board of Agriculture for lecturers	$29 94
7.	Average expenditure, per institute, by societies	$30 51
8.	Total average epxense per institute	$60 45
9.	Total average number of persons in attendance at two hundred and thirty-three (233) institutes reported—one not reported	85,953
10.	Average number of persons in attendance at each	368.9
11.	Number of independent institutes reported	29
12.	Expense of twenty-nine (29) independent institutes	$929 23
13.	Average expense of independent institutes	$32 04
14.	Total average number of persons attending the twenty-nine (29) independent institutes reported	9,368
15.	Average attendence at each of the twenty-nine (29) independent institutes reported	323

Names of Lecturers and their Topics.

For the Institute Season of 1897-98.

Lecturers from Agricultural Department of the Ohio State University, Columbus, Ohio.

Prof. Wm. R. Lazenby,

HORTICULTURE AND FORESTRY.

1. Some Troublesome Weeds. Twenty Minutes.
2. Injurious Insects and Fungi. Thirty minutes.
3. Tree Planting for Shade, Ornament and Timber. Twenty minutes.
4. How to establish an Apple Orchard. Thirty minutes.
5. The Fruit Grower's Opportunity. Twenty minutes.
6. The External Adornment of the Home. Thirty minutes.
7. Science and Farming. Twenty minutes.
8. Something about Honey Bees. Thirty minutes.
9. Some Profitable Garden Crops. Twenty-five minutes.
10. The Use of Flowers and plants. Thirty minutes.

Prof. W. A. Kellerman,

BOTANY.

1. New Methods for Preventing Oat Smut and Wheat Smut. Forty minutes.
2. Bacteria. Forty minutes.
3. Air and Soil in Relation to Health. Thirty minutes.
4. Vegetable Physiology. Forty minutes.
5. Science on the Farm. Thirty minutes.
6. Vegetable Parasites of the Orchard. Forty minutes.
7. Home Education. Forty minutes.

Prof. W. David Gibbs,

AGRICULTURE.

1. Importance of Soil Moisture in Crop Growth. Twenty-five minutes.
2. Controlling Soil Moisture by Tillage. Twenty-five minutes.
3. Corn Culture. Thirty minutes.
4 Modern Methods of Tillage. Twenty-five minutes.
5. Some Reasons for Crop Rotation. Twenty minutes.

6. Objects of Agricultural Education. Twenty minutes.
7. Some Opportunities for the Young Farmer. Forty minutes. Night.
8. Stock Food and Feeding. Thirty minutes.

Prof. David S. White, Dean,

COLLEGE OF VETERINARY MEDICINE.

1. Tuberculosis among Cattle. Forty minutes.
2. The Application and Value of the Tuberculin Test. Thirty minutes.
3. Hog Cholera. Thirty-five minutes.
4. Grub in the Head of Sheep. Thirty minutes.
5. Shall we Stop Breeding Horses? Forty-five minutes.
6. The Care of the Horses' Hoofs. Thirty-five minutes.

Charles W. Burkett,

AGRICULTURE.

1. Butter Making on the Farm. Twenty minutes.
2. Feeding Farm Animals. Twenty-five minutes.
3. Care and Feeding of Poultry. Fifteen minutes.
4. Value and Preparation of Meats. Fifteen minutes.
5. How to Reclaim Exhausted Soils. Fifteen minutes.
6. Modern Methods in Corn Culture. Twenty minutes.
7. What is Taught in an Agricultural College. Fifteen minutes.
8. Home Life on the Farm. Twenty-five minutes.
9. What We are Living For. Twenty-five minutes.

Lecturers from the Ohio Agricultural Experiment Station, Wooster, Ohio.

C. E. Thorne,

DIRECTOR.

1. Recent Experiments in the Use of Fertilizers. Thirty minutes.
2. Hints to Purchasers of Commercial Fertilizers. Thirty minutes.
3. Some Points in Wheat Culture. Twenty-five minutes.
4. Some Wastes on the Farm. Thirty minutes.
5. Grain Smuts, their Cost and Prevention. Thirty minutes.
6. The Apples of our Boyhood; Can we Produce Them Again? Twenty-five minutes.
7. The Agricultural Experiment Station, its Object and Methods of Work. Thirty minutes.
8. The Ohio Farmers' Outlook. Thirty minutes.
9. The Ideal Farm Home. Thirty-five minutes. Night.
10. What shall We Eat? Thirty-five minutes. Night.
11. The Farm and the School. Thirty-five minutes. Night.

W. J. Green,

HORTICULTURIST.

1. Irrigation for the Garden. Twenty minutes.
2. Are Northern Grown Seeds Superior to Others? Twenty minutes.
3. Potatoes.
    - *a.* Fertilizers. Twenty minutes.
    - *b.* Treatment of Seed and Spraying. Twenty minutes.
    - *c.* Varieties and Cultivation. Twenty minutes.
4. Essentials in Orchard Management.
    - *a.* Selection of Trees and Planting. Twenty minutes.
    - *b.* Cultivation. Twenty minutes.
    - *c.* Spraying. Twenty minutes.
    - *d.* Pruning and Thinning. Twenty minutes.
    - *e.* Maintaining Fertility in Orchards. Twenty minutes.
5. The culture of small fruits for Home Use. Thirty minutes.
6. Intensive Strawberry Culture. Thirty minutes.

J. Fremont Hickman,

AGRICULTURIST.

1. Some Suggestions about the Sugar Beet Industry in Ohio. Thirty minutes.
2. A Few Hints in Growing a Crop of Oats. Twenty minutes.
3. Stabling and Management of Dairy Cows. Thirty minutes.
4. Commercial Fertilizers. Twenty-five minutes.
5. Preserving and Applying Liquid Manures. Thirty minutes.
6. Modern Methods in Corn Culture. Twenty-five minutes.
7. Some facts in Feeding for Beef. Twenty minutes.
8. Timely Thoughts for Girls and Boys of the Farm. Twenty minutes.
9. The Relative Values of Food for Stock. Twenty minutes.
10. Shrinkage in Grain, Straw and Hay. Fifteen minutes.
11. Dehorning, Feeding and Rearing Calves. Twenty minutes.
12. Does the Farmer need an Education? Twenty-five minutes. Night.
13. Some Points About Growing a Crop of Wheat. Twenty-five minutes.

Augustine D. Selby.

BOTANIST AND CHEMIST.

1. Some Principles of Botany Which Underlie Agriculture. Twenty-five minutes.
2. Fruit Canning—Principles and Methods. Thirty minutes.
3. Science Training for Farm Life. Thirty minutes.
4. Plant Diseases: How Caused and How Prevented. Twenty-five minutes.
5. The Smuts of Grain and Their Prevention. Twenty-five minutes.
6. Diseases of the Plum and Cherry. Twenty minutes.
7. Diseases of the Peach and Spraying Peach Trees. Thirty minutes.
8. What is the Matter with the Tomatoes, Melons and Cucumbers? Thirty minutes.
9. Weeds and the Ohio Weed Law. Twenty minutes.
10. Hints to Purchasers of Commercial Fertilizers. Thirty minutes.
11. Sugar Beets and Beet Sugar for Ohio. Thirty minutes.
12. Chemistry Applied to Cookery and Diet. Thirty minutes.

F. M. Webster,

ENTOMOLOGIST.

1. The Hessian Fly and Methods of Prevention. Twenty minutes.
2. The Western Corn-Root Worm in Ohio. Twenty-five minutes.
3. Some of the Older Pests of the Corn Field. Twenty minutes.
4. Some Insect Enemies of Clover. Twenty minutes.
5. How to Deal with Insect Pests of the Orchard. Twenty minutes.
6. Some Little Known Wheat Insects. Twenty minutes.
7. The Farmer Boy: What Shall His Future Be? Fifty minutes.
8. The Chinch Bug. Twenty minutes.

Lecturers Employed by the Ohio State Board of Agriculture, with Post-office Addresses and Topics.

John Begg, Columbus Grove, O.

1. Wheat, its Culture and Care. Twenty-five minutes.
2. The Hog as a Live Stock Farm Product. Twenty-five minutes.
3. Practical Economy in Farm Management. Twenty minutes.
4. The Farmer's Education; How and Where Obtained. Thirty five minutes. Night.
5. How Shall We keep up the Fertility of our Farms? Twenty minutes.
6. The Bright Side of Farm Life. Forty minutes. Night.
7. What of the Cattle Business? Twenty-five minutes.
8. Value of Incidental Profits in Farming. Twenty minutes.
9. Experience in Corn Growing. Twenty-five minutes.
10. Shall We go into Specialties in Farming? Thirty minutes.
11. Woman's Work and Influence in a Farm Home. Thirty minutes. Night.
12. Farm Literature—What it Should be. Thirty-five minutes. Night.

O. E. Bradfute, Cedarville, O.

1. The Modern Beef Animal and How to Produce it. Thirty minutes.
2. The Calf. Twenty minutes.
3. The Value of a Pedigree. Twenty minutes.
4. The Agricultural Fair. Twenty minutes.
5. Management of a Pure Blood Herd of Cattle. Twenty-five minutes.
6. An Up to Date Stock Farm. Thirty minutes.
7. How Prize Winners are Made. Twenty Minutes.
8. Free Rural Mail Delivery. Thirty minutes.
9. The Farmer's Position. Thirty minutes. Night.
10. Why am I a Farmer? Thirty minutes. Night.
11. Special Purpose Against General Purpose, as Applied to Cattle. Twenty-five minutes.
12. The Various Breeds of Cattle—Descriptive and Historical. Twenty to thirty minutes.

B. H. Brown, Oxford, O.

1. Small Fruits for the Family. Thirty minutes.
2. The Farmer's Garden. Thirty minutes.
3. Root Crops; Culture, Storing, Feeding and Value Compared with Other Feeds. Thirty minutes.
4. Fruit trees; Planting, Cultivating, etc. Forty minutes.
5. Enemies of the Orchard and Small Fruits. Forty minutes.
6. Special Crops; Onions, Sweet Potatoes and Beans. Thirty minutes.
7. Winter on the Farm. Forty minutes. Night.

W. N. Cowden, Quaker City, O.

1. Should the Farmer with Present Conditions and Prospects Keep Sheep? Twenty minutes,
2. How to Make Sheep Husbandry Profitable. Twenty minutes.
3. Peach Culture. Twenty minutes.
4. Profitable Fruit Growing. Thirty minutes.
5. Education Needed by the Farmer. Thirty minutes. Night.
6. Farming On or Off the Farm—Which? Twenty-five minutes. Night.
7. Taxation. Forty minutes. Night.
8. Laws Needed by Agriculture. Twenty minutes.
9. The Three Bells. Twenty minutes. Night.
10. How to Retain Fertility and How to Regain Lost Fertility. Thirty minutes.
11. What is Pedigree Worth? Fifteen minutes.
12. In the Berry Field. Twenty minutes.

F. A. Derthick, Mantua, O.

1. Growing Potatoes. Twenty-five minutes.
2. Management of the Dairy. Twenty-five minutes.
3. Corn Culture. Twenty-five minutes.
4. Preparing Wheat Ground. Twenty-five minutes.
5. Mixed or Special Farming, Which? Twenty-five minutes
6. The Fruits of the Grange. Thirty-minutes.
7. How to Handle the Horse. Twenty-five minutes.
8. The State Board of Agriculture and its Work. Thirty minutes.
9. What to Read and How to Read. Forty minutes. Night.
10. Why I am a Farmer. Forty minutes. Night.
11. Would the Single Tax be Just? Thirty minutes.

J. Al. Dobie, Gutman, O.

1. Growing Hogs for Profit. Thirty minutes.
2. Management of Winter Pigs. Fifteen minutes.
3. Does it pay to Cook Food for Stock? Twenty minutes.
4. Advantages of Partial Soiling. Twenty-five minutes.
5. Shall we Breed Higher or Feed Better? Twenty minutes.
6. Training Horses for Farm Work. Twenty minutes.
7. Preparation of Seed Beds. Fifteen minutes.
8. The Educated Farmer. Thirty minutes. Night.

E. E. Elliott, Morning Sun, O.

1. Cross Breeding; Its Dangers. Twenty minutes.
2. A Study in Hog Character. Twenty-five minutes.
3. Grasses and their Adaptation. Twenty-five minutes.
4. Forage and Fodder Plants. Fifteen minutes.
5. The Abuses of Agricultural Fairs. Twenty-five minutes.
6. Better Seed, Better Yield. Twenty minutes.
7. The Problem of Hired Help. Twenty minutes.
8. Master or Slave. Thirty minutes. Night.
9. The Eye and Ear. (Educational.) Forty minutes. Night.
10. Birds from a Farmer's Point of View. Twenty minutes.

S. H. Ellis, Springboro, O.

1. The Outlook for the Farmer's Boy. Twenty minutes.
2. How Can we Make our Country Schools More Efficient? Twenty-five minutes.
3. What is the Ohio State University? Twenty-five minutes.
4. Some of the Advantages Derived from Farmers' Institutes. Thirty minutes.
5. The Ohio Agricultural Experiment Station. Twenty minutes.
6. Farm Management. Twenty-five minutes.
7. The Bond of Union Among Farmers. Twenty-five minutes.
8. Small Fruits on the Farm. Twenty minutes.
9. Washday in the Farm Home. Twenty-five minutes.
10. How to Grow and Market Hogs. Twenty-five minutes.
11. The Crops that the Farmer Must not Neglect. Thirty minutes.

W. W. Farnsworth, Waterville, O.

1. The Apple for Home Use and Market. Fifteen to twenty minutes.
2. Tools, Appliances and Conveniences for Farm and Orchard. Fifteen to twenty minutes.
3. Pruning Trees, Vines, etc. (Illustrated.) Fifteen to twenty minutes.
4. The Farm Horse, His Selection and Management. Fifteen to twenty minutes.
5. Modern Potato Culture. Fifteen to twenty minutes.
6. Small Fruit Culture for Home or Market. Twenty to forty minutes.
7. Orchard Management. Twenty to thirty minutes.
8. Maintaining, Developing and Increasing the Fertility of the Fruit Farm. Thirty to forty minutes.
9. Ornamenting and Improving the Farm Home and Surroundings. Fifteen to twenty minutes.
10. The Farmer's Boy, is he Receiving too Many Advantages? Thirty to forty minutes.
11. How far is it to the Klondike? Twenty to thirty minutes. Night.

C. M. Freeman, Rex, O.

1. Special versus General Farming. Twenty-five minutes.
2. Caring for Cornfodder. Fifteen minutes.
3. The Preservation of our Forests. Twenty-five minutes.
4. Why Farmers are Humbugged in Buying Fruit Trees. Twenty minutes.
5. Why Young Trees Die for Farmers. Twenty minutes.
6. Some Business Requirements of the Farmer. Twenty minutes.
7. What Varieties of Fruit to Plant. Fifteen minutes.

8. The Farmer's Door Yard. Twenty minutes.
9. Do Farmers Need to Organize? Twenty-five minutes.
10. Can We Afford Township High Schools? Forty minutes. Night.
11. What Shall we do with our Boys and Girls? Forty minutes. Night.

John Gould, Aurora Station, O.

1. Selection of Dairy Cows (Illustrated). Forty minutes.
2. New Ideas and Methods in Butter Making. Thirty minutes.
3. Things New and Old About Silos. Twenty minutes.
4. Some Experiments and Practices on our Farm. Thirty minutes.
5. Clover and Catch Crops as Aids. Thirty minutes.
6. About Corn and its Culture. Forty minutes.
7. Changes in Feeding the World. Forty minutes. Night.
8. Rural Town Improvements. Twenty minutes.
9. Sixty minutes in Maine. Forty Minutes Night.
10. Up to date dairying. Forty to sixty minutes.

J. F. Greene, Sandusky, O.

1. Recent School Legislation—What More is Needed? Twenty to forty minutes.
2. The Education of Farmers' Girls and Boys. Thirty to forty-five minutes. Night.
3. The Citizen Farmer. Thirty to forty-five minutes. Night.
4. A Farmer's Library; Of What it Should Consist and How Obtained. Thirty minutes.
5. Small Fruit for the Home. Twenty to thirty minutes.
6. Small Fruit for Market. Fifteen minutes.
7. Preparation of Soil for Crop. Twenty minutes.
8. Value of Organization to the Farmer. Thirty minutes.
9. Noxious Weeds in Fields and Other Places. Fifteen minutes.
10. Spraying; How Done—Does it Pay? Fifteen minutes.
11. The Sugar Beet Industry for Ohio Farmers. Thirty minutes.
12. Shall Farmers Insure their Own Property in their Own Companies? Thirty minutes.
13. The Centralization of Country Schools—Is it Practicable and Best? Thirty minutes. Night.

G. C. Housekeeper, Bowling Greene, O.

1. Special or Mixed Farming, Which? Thirty minutes.
2. Growing and Marketing Potatoes. Thirty minutes.
3. Fruits for Home Use. Thirty minutes.
4. Fruit Growing for Market. Thirty minutes.
5. Our Weather Service; Its Methods and Value. Twenty minutes.
6. Making Home and Farm Life Happier. Thirty minutes. Night.
7. A Valuable Possession; Our Sons and Daughters. Thirty minutes. Night.

T. C. Laylin, Norwalk, O.

1. Fields and Fences. Twenty minutes.
2. Breeding and Management of Mutton Lambs. Twenty minutes.
3. The Origin and Fertility of the Soil. Twenty minutes.
4. The Maintenance of Fertility. Twenty minutes.

5. Farmers' Problems. Twenty minutes.
6. Our Boys. Thirty minutes. Night.
7. Genius in Farming. Thirty minutes. Night.

Theo. F. Longenecker, Dayton, O.

1. Farmers and Fairs. Twenty minutes.
2. Plant Growth and Plant Food. Twenty minutes.
3. The Garden. (Illustrated.) Twenty minutes.
4. The Grape and How to Care for it. (Illustrated.) Fifteen minutes.
5. Tree Fruits for Home Use and Market. (Illustrated.) Twenty minutes.
6. The New and the Old in Grains, Fruits and Vegetables. Fifteen minutes.
7. Budding, Grafting—Reproduction from Buds and Cuttings. (Illustrated.) Fifteen minutes.
8. Insect Enemies of Orchard and Garden. Fifteen minutes.
9. Fungous Diseases and How to Prevent them. Fifteen minutes.
10. Economy in Beautifying Home Surroundings, or Landscape Gardening. (Illustrated.) Twenty minutes.
11. Education vs. Learning. Thirty-five minutes. Night.
12. Character Building. Forty minutes. Night.

S. K. McLaughlin, Hurford, O.

1. Fine Wool Sheep—Breeding and Keeping. Twenty-five minutes.
2. The Farmer's Garden and Truck Patch. Twenty minutes
3. Yearlings for Mutton. Twenty minutes.
4. Good Roads, How to Secure and Maintain Them. Fifteen minutes.
5. Agricultural Fairs, Their Use and Abuse. Twenty minutes.
6. How I Raised a Large Crop of Wheat in 1896 and Why I Failed to do so in 1897. Twenty minutes.
7. Preparing Wool for Market. Fifteen minutes.
8. The Farmer's Wife. Thirty minutes. Night.
9. The Closing Century. Thirty minutes. Night.

Dr. F. B. McNeal, Alcony, O.

1. The Extent and Effect of Food Adulteration (with samples). Forty-five minutes. Night.
2. Sheep on the Farm. Twenty minutes.
3. Legislation to Prevent the Sale of Adulterated Food Products. Thirty minutes.
4. Taxation in Ohio. Forty minutes.
5. What I know of the Ohio Dairy and Food Commission. Thirty minutes.
6. Some Business Standards of the United States. Forty to fifty minutes.
7. Foods and Food Values (with charts). Forty to fifty minutes. Night.
8. The Farmer in Relation to Other Industrial Citizens. Thirty to thirty-five minutes. Night.
9. The Chemistry of Digestion. Thirty minutes.
10. The Proprietary System vs. Our Patent Laws. Thirty minutes.

Thos. J. Miller, Leipsic, O.

1. Breeding and Feeding Cattle. Thirty minutes.
2. Breeding and Feeding Hogs. Thirty minutes.
3. A Program for the Farm. Twenty-five minutes.

4. Little Things on the Farm. Twenty minutes.
5. Right Kind of Encouragement for Our Young People. Thirty minutes. Night.
6. The kind of a Man the Times Demand. Thirty minutes. Night.

M. C. Morris, Shandon, O.

1. The Cultivation of Corn. Thirty minutes.
2. The Management of a Clover Seed Crop. Thirty minutes.
3. The Successful Rotation of Crops. Twenty minutes.
4. How to Apply Manures. Twenty minutes.
5. Farm Implements—What to have. Twenty minutes.
6. Lines of Practical Economy. Thirty minutes.
7. Poultry, a Profitable Farm Crop. Twenty minutes.
8. What stock, and What Amount of It Can the Average Farmer Afford to Raise? Thirty minutes.
9. Does the Farmer Improve his Opportunities? Sixty minutes. Night.

J. L. Roudebush, Stonelick, O.

1. Small Fruits. Fifteen minutes.
2. Potatoes. Fifteen minutes.
3. Some Mistakes in Gardening. Fifteen minutes.
4. Is it Profitable to Raise Horses, if so, What Class? Fifteen minutes
5. Feeding Stock for Profit. Fifteen minutes.
6. What Weeds, Insect Pests and Fungi Cost the Farmers of Ohio, and Methods of Destroying them. Twenty-five minutes.
7. Soil Exhaustion and Soil Feeding. Fifteen minutes.
8. Farm Fences. Fifteen minutes.
9. Does Improved Stock Pay the Average Farmer? Twenty minutes.
10. Gates. Thirty minutes. Night.
11. The Influence of Agriculture. Thirty minutes. Night.
12. Six Months in Alaska. Thirty minutes. Night.

Geo. E. Scott, Mt. Pleasant, O.

1. Clover the Foundation of Farm Prosperity. Twenty minutes.
2. The Ups and Downs of Potato Growing. Twenty minutes.
3. The Past, Present, and Future Cow. Twenty minutes.
4. The American Creamery System. Twenty minutes.
5. The Babcock Test. Twenty minutes.
6. Wheat as a Cash and a Rotary Crop. Twenty minutes.
7. The Necessary Poultry Yard. Fifteen minutes.
8. Attractions and Improvements in the Farm Home. Thirty minutes. Night.
9. Things Important. Twenty-five minutes. Night.
10. Reformations in American Agriculture. Twenty minutes.

John L. Shawver, Bellefontaine, O.

1. The Farm Dairy. Fifteen minutes.
2. Butter Making. Twenty-five minutes.
3. Feeds and Feeding. Twenty-five minutes.
4. Barns and their Cost. Fifteen minutes.
5. The Farm Dwelling. Fifteen minutes.

6. Household Helps. Twenty-five minutes.
7. The Fruit Garden. Fifteen minutes.
8. Farm Accounts. Twenty minutes.
9. Saving and Applying Manures. Twenty minutes.
10. Clovers and their Values. Thirty minutes.
11. Glimpses of the Sea. Thirty to forty minutes. Night.
12. Seedtime and Harvest—A Talk to Young People. Thirty minutes. Night.

M. I. Todd, Wakeman, O.

1. A Resurrected Industry. Twenty-five minutes.
2. Fertilizers, Their Uses and Abuses. Twenty minutes.
3. Varieties of Valuable Fruits for Home Use and Methods of Culture. Twenty minutes.
4. The Ideal Farmer. Thirty minutes. Night.
5. Do we Need any Improvement in our Common School System? Twenty-five to thirty minutes.
6. Taxation. Thirty minutes. Night.
7. How best to Breed and Feed for Mutton. Thirty minutes.
8. Methods in a Rotation with Corn, Oats, Wheat, and Clover with Timothy. Twenty-five to thirty minutes.

S. H. Todd, Wakeman, O.

1. Deep Cultivation vs. Shallow Cultivation. Twenty-five minutes.
2. How Did I Raise and Gather my Potatoes at a cost of Five Cents per Bushel? Twenty minutes.
3. Buying and Using Fertilizers, How to get the Best Results. Twenty-five minutes.
4. Corn Culture. Twenty minutes.
5. On Which Side of the Fence am I Farming? Twenty-five minutes.
6. How to prevent and Cure Many of the Diseases that Prey upon our Sheep. Twenty-five minutes.
7. Winter Lambs, their Care and Management. Twenty minutes.
8. Put on the Brake. Sixty minutes. Night.
9. Does it Pay to Wash Sheep? Twenty minutes.
10. The Farmer's Garden. Twenty minutes.
11. The Farm and the Hired Man. Twenty-five minutes.
12. Early Maturity in our Animals, Its Value and How Obtained. Thirty minutes.
13. How Shall we Arrange our Homes to Lessen the Amount of Friction? Twenty minutes.
14. Poultry and the Egg Basket. Twenty-five minutes.
15. The Cross Bred Animal for the Farmer. Twenty minutes.
16. Which of the Two is the More Important Crop, the Boys and Girls, or the Stock? Sixty minutes. Night.

A. L. White, Norwich, O.

1. Corn. Twenty minutes.
2. Our County Fairs. Twenty minutes.
3. Children of the Farm. Thirty minutes. Night.
4. Farm Life. Thirty-five minutes. Night.
5. Field Management. Twenty minutes.

6. Profitable Sheep Feeding. Twenty minutes.
7. Confidence in our Work. Twenty-five minutes.
8. Swine Raising. Fifteen minutes.
9. Skilled Labor upon the Farm. Twenty minutes.

C. G. Williams, Gustavus, O.

1. Wheat: Its Culture and Value. Twenty minutes.
2. To and Fro in the Potato Field. Twenty minutes.
3. What Foods Would we Better Bring to the Farm and What Crops Sell Off? Twenty minutes.
4. The Best Way to Buy Commercial Fertilizers. Thirty minutes.
5. Potato and Fertilizer Experiments. Twenty-five minutes.
6. Farming on Paper. Twenty minutes.
7. What Inducements Does the Farm Hold out to Young Men? Thirty-five minutes. Night.
8. The Farm—and What else? Thirty minutes. Night.

J. E. Wing, Mechanicsburg, O

1. Certainty in Clover Seeding. Fifteen minutes.
2. Three Newer Forage Crops that Succeed in Ohio (Oats, Alfalfa and Rape). Thirty minutes.
3. Alfalfa in Ohio. Fifteen minutes.
4. The Ideal Rotation for the Stock Farmer; Corn, Oats, Clover. Twenty minutes.
5. The Ewe and her Lamb. Thirty minutes.
6. Winter Feeding of Lambs. Thirty minutes.
7. What is the Matter with our Lambs? Thirty minutes.
8. The Model Barn. Thirty minutes.
9. About the Farmer's Home. Thirty-five minutes. Night.
10. Ranch Life from the Cow Boy's Point of View. Forty-five minutes. Night.

PAPERS READ

AT

FARMERS' INSTITUTES 1897-1898.

Forwarded to the Secretary of the Department of Agriculture for Publication in the Annual Institute Report.

THE SUGAR BEET INDUSTRY IN OHIO.

By Prof. J. Fremont Hickman, Wooster, O.

That we may consider the subject of sugar beet culture in Ohio intelligently, it has occurred to me that we must first specify what is meant by the term sugar beet. Does it mean the common cow beet or mangold wurzel? Does it mean the beet that grows in our gardens, or is it a special kind grown purposely for the production of sugar? Gathering all available evidence and summarizing the views of the best authorities we are confronted with but one conclusion, that it is but a sport of the common beet, but that selection and cultivation have developed in this particular sport a high percentage of saccharine matter. So that the name once applied simply to indicate a slight degree of sweetness now signifies that this vegetable has a specific and fixed place in the vegetable kingdom, and bids fair to be the means of enlarging the agricultural and manufacturing interests of both the Old and the New World.

The Department of Agriculture at Washington has been investigating, with more than usual interest, the subject of sugar beet culture in the United States, and has already determined many valuable points bearing upon the production and probable income from the introduction of what promises to be one among the greatest industries of our country. The rapid progress made and the success obtained on the great Pacific slope in this new field of vegetable production have caused our more conservative eastern agriculturists to not only inquire into the merits of sugar beets as a crop, but also to want to try their hands in cultivating them. Some of the more visionary have built great air castles and have proposed to grow the beets, make the sugar and place it on the market as a finished farm product. But the farmer of America, as is the case with those of Europe in respect to the sugar beet industry, must be satisfied with acquiring sufficient agricultural skill to produce a crop of beets with a paying tonnage and a sufficiently high content of sugar to justify a continuance in the business. Granting then, that our work is one of growing the beets, we will give a few suggestions as to the details of the work.

In my experience I have found that beets, like almost every other crop, will follow some things better than others; to this end I believe the best preparation is a clover sod. While this is true, it is a noteworthy fact that any land that will produce a good corn or a good potato crop will produce a good yield of beets.

But, as might be expected, an open gravelly soil will produce a greater tonnage than a stiff clay, in fact, the latter is perhaps one of the poorest of beet soils, for the reason that the roots do not readily penetrate the stiffer subsoil. As with all root crops, perfect drainage, either natural or artificial, is an absolute necessity to the production of a beet containing a high percentage of sugar with the requisite degree of purity. If it is possible to have these two requisites, then add a third, namely, a soil as nearly free from weeds as possible. With these three things, other conditions and care being normal, a fair crop of standard quality is reasonably certain. It is claimed that barnyard manure should not in any case be applied immediately before planting, but should be put on during the fall before. Highly nitrogenous fertilizers should not be used, but a small percentage of nitrogen with a high percentage of phosphoric acid and potash are found, from a theoretical standpoint, highly recommended. The argument against the use of nitrogenous fertilizers is based upon the fact that they tend to prolong the growing season of the plant, and in our soil and climate the addition of something to hasten maturity would serve a better purpose, as we shall find later on.

In applying barn or stall manures less trouble will be encountered if they are well rotted and in no case put in piles on the field. I regard this a bad practice in any case, but especially so when a crop of sugar beets is to follow the application. Sixteen tons per acre I would regard as the extreme limit in applying yard manure. The too free use of such manure is apt to produce overgrowth in the beets, which makes them ill suited to the manufacture of sugar. If applied in an unrotted condition, it will certainly seriously injure the crop in case of dry weather. The nitrogenous manures tend to produce a very heavy and large growth of the beet and thus to diminish its content of sugar. Dr. Wiley says, "The quality of a beet may be impaired, even with little or no diminution of the sugar content, by reason of the increase of the percentage of non-sugars present."

The real purity of the beet is also to be distinguished from the apparent purity of the juice. The real purity of the beet is obtained by dividing the percentage of sugar in the beet by the total solid matter in solution therein; the apparent purity of the juice by dividing the percentage of sugar therein by the apparent percentage of solids as indicated by the specific gravity.

On general principles I think best to avoid fall plowing as much as possible, but expert sugar beet growers recommend manuring in the fall and plowing at once, and, if I am not misinformed, it is the practice in European countries, and in many instances it is stipulated in articles of agreement between landlords, and tenants, that lands to be plowed for root crops shall be manured and plowed the preceding fall.

The ideal sugar beet cannot be grown on our thinner lands with only such preparation as is given for corn and potatoes. The deeper root growth requires a greater depth of soil, and can be secured only by plowing ten to twelve, or even more inches deep, or perhaps by subsoiling. The latter method on most Ohio soils will best reach the desired end, namely, a soil sufficiently deep and loose to permit the beet to grow down into rather than to be pushed up out of and grow on top of the soil. After thorough plowing, the sugar beet grower is not and will not be satisfied with a poorly prepared seed-bed, but will work at it with tillage implements until the surface is as fine and free from clods as time, patience, endurance, and long suffering will work out.

The final stirring should be given as short a time before planting as is consistent with the means and men at hand, the object of which is to kill as many as possible of the weeds that may have started, for it will be fully fourteen days after planting before the beets will begin to show through the ground, and during this time, unless the ground is comparatively free from them, more weeds than beets will have started.

The ground is most quickly marked with a sled having about six runners, making six rows at each crossing; the rows to be made as close as they can be worked with a horse. Opinions will differ as to the distance this will be, but they will not be too close if made twenty-four inches apart, and more beets and better quality will be produced if they can be cultivated in rows twenty inches apart. The seed should be either the Improved Vilmorin or the Kleinwanzlebener. There are other good varieties, but the two above mentioned are regarded among the best varieties grown.

Another essential is that the seed should be fresh, as old seed is sometimes almost worthless, and seldom, if ever, possesses the vitality of new seed. The planting may be done either by hand or by a garden seed drill such as is used for planting onions, parsnips, and other small seed. More seed will be required if planted by drill than if put in by hand; from six to seven pounds per acre if hand planted, and from eleven to twelve if put in with drill. It should be put in from one-half to one and a half inches deep, and three to four inches apart in the row. With either method of planting some pressure to compact the earth about the seed is considered helpful. In hand planting this may be done with the foot, and if planted with a drill a roller should follow.

From the peculiar structure of the seed, considerable moisture is required to start germination. The compacting of the soil starts and hastens absorption of moisture, causing a quicker development of the germ.

The time to plant is just as early in the spring as the ground can be prepared. The plant is a native of much colder latitudes than our corn, and will germinate and grow in temperatures where corn would do nothing, and for that reason may be planted before, rather than after the corn planting season.

Should the ground for any reason become crusted after planting, it will be necessary to break it by some means, for the beet plant is not sufficiently strong to force its way through. Just as soon as the beet plants are through the ground sufficiently to be seen along the row, a cultivator should be run through to kill all weeds possible without disturbing the plants. As early as consistent the beets should be thinned to an average distance of eight inches apart in the rows. This may be done either by hand or a three cornered hoe, or with a small four inch hoe of the ordinary shape. If it is found impracticable to remove all weeds with the small hoe, some hand work will be necessary, but the less manual labor of this kind required the more profit in growing sugar beets, for this is the tedious and expensive part of sugar beet culture.

If it is a necessity, and boy labor can be secured, it will in a measure reduce the cost. In the older countries of Germany and France women and children do a large share of this work, curtailing materially the cost of culture. One weeding thoroughly done, ought to suffice and the later cultivation should be level, and may be done with some of the surface cultivators recently put upon the market.

If the stand at the first weeding is found to be very imperfect, transplanting may be resorted to, taking up where too thick and placing them where the stand is insufficient. In transplanting a hole should be made with a sharp round stick, or dibble, and after placing the plant, press the dirt close to it, not only at the crown, but as far down as possible. This should be done while the plants are quite small. It is not recommended to transplant except in extreme cases, for the reason that the transplanted beet will be less perfect. It will be irregular in form, and instead of showing a straight and perfect root will, perhaps, bear two or three prongs or branch roots.

The crop should have tillage at least once each week until the leaves have grown sufficiently to almost shade the ground, but it is not good husbandry to cultivate when the work will disturb or destroy the leaves. During cultivation no dirt should be thrown up to the plant except it be found forcing its way above the surface and growing above ground, in which case those so exposed should be covered, if possible, for the reason that the part of the beet grown above detracts from the value of the entire crop on account of it being less rich in sugar, and the exposed part, like a potato grown partly out of the ground, is of a green color, which stains the juice and imposes on the manufacturer extra labor in purifying.

One thing to be borne in mind in growing sugar beets is that they are benefited by growing close together and by abundance of sunshine, the latter not necessarily on the beet, but upon the foliage. This fact has been pretty well determined, that beets growing widely separated produce less sugar than those grown more densely, and that beets grown in the shade are not so rich in saccharine matter as those grown in the open field with exposed condition. It generally applies also that beets grown on high ground are of better quality than those grown on low lands. This may be in part due to another well defined fact, namely, that large beets are less rich in sugar than small or medium sized ones.

If the beet seed is planted early, the cultivation of the crop should be almost if not entirely out of the way before harvest time. and the field require but little attention until the season for gathering the crop, which, in our latitude, should be during the month of October.

Let me again urge at this point the necessity of early planting, for the reason that green beets delivered at the factory will certainly not bring as much per ton as mature or ripe ones. Ripe beets may be easily distinguished from the greener ones by the color of the leaves. which in the immature beet is a dense dark green, while the riper ones first show a pale green, then a yellow color. This, however, is seldom true of all the leaves of the beet, and we are not justified in waiting until all have shown the yellow complexion. Frosts do not injure the beet so long as freezing does not occur, but they should not be left in the ground long enough to incur any risk on this point, neither should any risk of second growth be taken. Of the two evils it will be better to pull the beets a little green than to allow them to make an advance in the second growth. Either of these conditions decreases the value by reducing the sugar content. Harvesting the crop is by no means a small job, but may be likened to the digging of a crop of potatoes by the hoe or fork method. There is, however, an implement made for lifting them out of the ground which is said to work with considerable speed and accuracy when the rows are absolutely straight. In addition to getting them out of the ground, there is a work of topping; this can be best done with a sharp butcher knife, and should include leaves and a small portion of the crown. Dr. Wiley says the object of removing this portion of the beet is to prevent the mineral salts which have accumulated in large quantities therein from entering the factory. These mineral salts exercise a very deleterious influence on the crystallization of the sugar, and should therefore be removed. These tops with the leaves are more valuable for fertilizing than for any other purpose, and leaving them on the field will be more profitable than carting them off. Chemical analysis discloses the information that the beet leaves contain more than double as much fertilizing material as the beets when taken pound for pound. After removing the top, the beets may be thrown in piles, and covered with leaves or straw to protect them from the sun and from frosts or from freezing until they can be hauled to the factory.

Having given in detail the methods employed in producing the crop, this paper would not be complete without some idea of the cost of all the work and cash outlay in raising the beets. I do not have an itemized account of the cost of growing an acre of sugar beets, but have the next nearest thing, namely, the actual cost of growing an acre of mangold wurzels, which I give as follows. I find in my records of 1890 the following account with an acre of cow beets or mangolds:

Preparation of land	$4 00
Seed	1 20
Cultivation, including hand weeding	15 40
Harvesting and storing	10 76
Total	$31 36

In 1891 a similar account shows the following:

Preparation of land	$7 44
Seed	1 20
Cultivation	17 83
Harvesting	12 32
Total	$38 79

I think the above figures pretty high, and must not fail to call attention to the fact that labor on the above was charged at the rate of thirty cents an hour for man and team, and manual labor, when alone, was at the rate of one dollar and twenty-five cents and one dollar and fifty cents per day. By using cheaper help and charging less for teams I believe it is possible to produce sugar beets at a cost of twenty-eight to thirty-two dollars per acre. It must be remembered that nearly all of this expense is for labor, and in many instances this can be furnished by the farmer's family, in which case it will give employment to many unemployed and will make a handsome income from a comparatively small area of land.

The weeding, thinning and hoeing of beets are all operations requiring only ordinary skill, and may be engaged in by members of a family that would otherwise be idle.

Regarding yields per acre, enough is known to indicate something of our possibilities. The average yield in France for 1895 was ten and six-tenths tons; in Germany for 1894, eleven tons; 1895, thirteen tons, and in 1896, twelve tons. Austria's average for 1895 was ten tons. The Chino Company, of California, produced in 1896 an average of fourteen tons.

Three things are sought after in this crop; each of these three points is of vital importance. They are, a big crop in bulk, maturity and a high percentage in sugar, and these things all hinge on the point of early planting. Time is required to give size, age to secure maturity, and both time and age to develop sweetness. If we were to take the estimate of some of those who have sent samples to the station this fall, we would not need to have any fears on that score; more than five hundred samples have been sent to our laboratory for analysis, and each one sending samples is requested to give an estimate of the amount he could possibly raise to the acre. These estimates range from three to four tons per acre, up to as high as forty. The more conservative, however, estimate a possible yield of from ten to sixteen and even twenty tons per acre: Now, if Ohio could reach the average of these estimates, say about twelve to fourteen tons per acre, and could sell these beets at four dollars to four dollars and fifty cents per ton, it would insure a fair margin of profit, and in my judgment this is possible.

Secretary Wilson, in his recent report, says that the Department of Agriculture distributed seven tons of imported sugar beet seed last spring in twenty-seven states, among twenty-two thousand farmers. Its chemical department is analyzing six thousand samples from these fields of beets. It is also making special inquiry into the composition of beets grown from high grade seeds under different conditions of soil and climate.

In a recent number of the American Agriculturist we find the following interesting data: "The Pennsylvania Station has analyzed thirty-nine samples of sugar beets and expect many more. The highest per cent. of sugar in the juice has shown 17.54, and the lowest 6.85. The average may probably be stated as somewhere between 12 and 15 per cent."

In Kentucky comparatively few sugar beets were raised the past season. In 1898 a thorough test of the crop will be made in every county, under direction of the Experiment Station.

Dr. Scovill, of Lexington, writes: "Up to the present time results of analysis of sugar beets raised in this state do not justify us in recommending the erection of factories."

At the Missouri Station two hundred and fifty samples have been analyzed, covering nearly every county in the state. A little over 40 per cent. of the samples thus far analyzed have shown 12 per cent. or more of sugar content.

The Iowa Station has tested over nine hundred samples, with many more to come. Chemist Weems says: "There is no reason why Iowa farmers cannot raise sugar beets containing 12 per cent. sugar, with a purity of 80 per cent., where care and attention are given to them."

Over four hundred samples have been analyzed at the Illinois Station. The results are not yet available for publication, but Professor Hopkins, the chemist, states that where the proper conditions have been observed they have obtained satisfactory results.

At the Kansas Station two hundred and forty-six samples have been analyzed. The highest percentage observed was 19.5. The lowest percentage was 9.75, with a purity of 76.

The Ohio Station has analyzed nearly six hundred samples, showing, perhaps, as wide a variation in per cent. of sugar as any of the above, but in the main, results are quite as good as could have been expected, and if the results of this season's trials are a fair criterion of the ability of Ohio's soil to produce sugar beets, containing a high per cent. of sugar with a sufficient degree of purity, some sections of Ohio, at least, may be said to stand at the front, and if any of the states can grow sugar beets, Ohio will as surely gain that reputation as any of them. In this connection I want to call special attention to the fact that the past season has given us some of the most favorable conditions for a high percentage of sugar. The best authorities on sugar beet growing agree that plenty of moisture for the first two or three months after planting is a potent factor in securing tonnage. In the latter months clear weather with less rainfall auger the maximum percentage of sugar, and a high degree of purity. These conditions certainly were attained during the past summer in almost all sections of Ohio. Reasoning from this standpoint, it seems to me that prudence and conservatism suggest that it would be unwise for the people of Ohio to undertake to grow great areas of beets without a second year's trial in growing for quality, before attempting to secure expensive factories and undertaking to supply one or more of these factories with sufficient beets to insure a good working season. While the production of the beets with the desired sugar content, and the necessary degree of purity ends the labors of the agriculturist, he must not lose sight of the manufacturer's interest, and that is, that the average sugar beet factory does not receive and work beets more than three months out of the twelve. For beets, like almost every other farm product, are susceptible to change, and, unfortunately, one among the first changes in the beet affects the saccharine matter and causes a deterioration in its value. This may follow exposure to the sun, which changes the color; the presence of heat wilts the root; heating, if piled deep in a room, causes changes in sugar.

Few of us realize the enormous expenditure necessary to build and equip a beet sugar factory. Many are built at a cost of two hundred thousand dollars and upwards. Few are built and equipped for much less. The one built recently in Wisconsin cost about one hundred and sixty thousand dollars and has a capacity of two hundred and seventy-five tons of beets per day of twenty-four hours. It seems unfortunate that beet sugar factories cannot be built on a small scale, but experience of all beet countries shows that this is simply out of the question. Small factories for making sugar, like small institutions of any other class, are soon forced to suspend on account of the fierce struggle for supremacy.

The number of factories in operation in Germany during 1895–96 was three hundred and seventy-nine; quantity of beets used, eleven million, six hundred and seventy-two thousand, eight hundred and sixteen tons; acres cultivated, nine hundred and thirty thousand, three hundred and seventy-two, or two thousand, three hundred and forty-three acres to each factory. Price paid for beets, four dollars and sixty-four cents per ton.

Number of factories in France in operation in 1895–96 was three hundred and fifty-six; quantity of beets used, five million, four hundred and eleven thousand, four hundred and eighty-four tons; acres cultivated, four hundred and five thousand, eight hundred and fifty-two, or one thousand, one hundred and forty acres for each factory.

Number of factories in Austria in 1895–6 was two hundred and sixteen; quantity of beets used, five million, seven hundred and sixty thousand tons.

Number of factories in Russia in 1895–6 was two hundred and seventy-seven; quantity of beets used, five million, three hundred and eleven thousand, eight hundred and eighty-eight tons.

After reading and considering the above figures I forsee that it will be necessary to interest a goodly number of farmers in any one locality before it will be possible to induce capitalists to invest in and establish a factory. It will be necessary for a large number of men to agree to furnish for a series of years beets in considerable quantities. To those who have had experience in these lines this is no little task. The sugar beet factory at Lehi, Utah, started in 1891 with one thousand, five hundred acres, and had increased this number in 1895 to three thousand, three hundred.

The factory at Chino, California, started in 1891 with one thousand, eight hundred acres, and had increased this number in 1895 to seven thousand, five hundred and twenty-nine. These figures indicate that those who started with the factory in the beet business enlarged their acreage very rapidly, or that their neighbors followed their example very quickly.

I cannot see at the present time that any section of Ohio is quite ready for a factory, but I do see that if our farmers choose to do so they can be ready within one year, and if they set themselves for it, can have two or three or even more, beet sugar factories in operation within the next two years. The foundation work, however, must be done by the farmer, not in endeavoring to secure the factory, but setting himself about to see if he can grow sugar beets of the desired quality, and if he can induce enough of his neighbors to go into it to produce enough to guarantee the delivery of the beet crop from thousands of acres to a factory. Just as soon as these things are done, the fellows to do the other part will not have to be hunted up, but will be on the ground, and will know almost as soon as the farmers that the beets can be produced and delivered in quantity and quality desired.

What is wanted to secure successful beet culture in Ohio is not money with which to build and equip factories, but men to guarantee that the beets will be grown to keep them running if they are built.

The indications and evidences thus far given go to show that Ohio has the soil, that Ohio is within the isothermal lines that indicate the belt known as the beet zone. The only thing lacking is a knowledge of how to produce the beets, and enough men of one mind to grow and deliver the raw material at the factory. Capital will do the balance, and instead of sending out of this country more than one million dollars each and every year for sugar we will be distributing that amount among our rural population, a goodly share of which will be Ohio's portion as a result of the introduction of the sugar beet industry.

GRASSES FOR OHIO PASTURES.

By E. E. Elliott, Morning Sun, O.

The history of the grasses is the history of agriculture. This statement will be better appreciated when it is remembered how wide a range is included in this family of plants. The *gramineae* or grasses, number over three thousand species. In this list we find all our common grasses of field and lowland, mountain and meadow. All the cereals, such as Indian corn, wheat, rye, barley, sorghum and others are properly included, although not usually referred to as such.

When we remember that the beginnings of husbandry were to be found in the cultivation of field crops, we can readily understand the important place of the grasses in history.

Nomadic tribes and wandering savages cared nothing for cultivated grains. Here today, yonder tomorrow, drifting from place to place, there was neither inclination to sow nor opportunity to reap. Without fixed abode there was no hope for advance in civilized methods of living.

Gradually there crept into the savage mind, however, the possibilities to be secured in a permanent abode. Why depend on the uncertain returns of the chase, the bounty of forest and stream, or, the still less certain crops of volunteer grains and seeds, and the chance yield of nut and palm trees, when it was possible to produce abundance for all needs by giving the season's forethought and care to those same grain fields and palm orchards?

Who would sow for another to reap? Not even the Nomad, and so when he found it necessary to watch the fields of wild grain which he claimed as his own, whether of his own sowing or not, he took the first step which made him an agriculturist. It is a long story but the grasses began with it and are interwoven throughout the whole course.

While the cereals are all properly grasses, it is common for us to refer, when this term is used, to those plants only that grow for forage, either naturally or artificially. The cultivation of grasses for this latter purpose, instead of for the grain yield, is comparatively modern. Grasses grew wild as they yet do and all of our cultivated species are but improvements of those found native in some particular region. Many of these, like the common cereals, have been greatly changed in character and appearance, and better adapted to the purposes for which they are used. By means of their widespread diffusion, numerous species have found congenial homes in the very soils and climates best adapted to their growth and thus improvement has been more rapid.

The Department of Agriculture has done the farmers incalculable good in extending investigations along this line and, doubtless, the day is fast approaching when there will be no barren spots uncovered with verdure, for some species will have been discovered exactly fitted by nature or culture to grow and thrive in that particular locality. Recent efforts have been directed to grassless sections of the southern states and to that vast territory in the far west where changing conditions seem to be causing the extinction of indigenous species and the ordinary grasses of eastern cultivation seem unfitted as yet to take the abandoned territory.

The acquaintance of Ohio farmers with the grasses is somewhat limited. We have not studied them as we should for the simple reason that over much of our state some of the most valuable varieties grow naturally and without effort on our part. With the exception of our dense forests, which are rapidly passing under the woodman's axe, there is no section of Ohio where the ground would not soon be covered with a dense mat of some or many of our native or naturalized grasses if proper conditions are granted. Of all the states in the Union, ours possesses possibly the widest diversity of soil if not of climate. We have swamp land and clay hills, alluvial valleys and original prairies; soils made by the grinding of the glaciers and soils formed from the recession of our great lake. Some are of limestone character, others pure sand. It stands to reason that a variety of grasses is needed to meet all these varying conditions, and a study of these is well worth the effort.

Of all our grasses the Kentucky blue grass seems most widely diffused in our state. Wherever there is lime in the soil it will be found the leading species. Where the soil is sandy and the spring water soft, blue grass does not thrive. As the greater part of Ohio is of limestone formation we find it growing in nearly every county. Blue grass is a pasture grass. Down in Kentucky it is cut for hay to some extent, but its main use is for grazing. It is nearest to the ideal for this purpose. It starts early in the spring, its sod is close and compact, it endures short cropping and responds quickly to warmth and moisture. We cannot forget its faults, however, chief of which is its inability to withstand drouth.

Closely akin to this species is the one commonly known as wire or June grass (*Poa Compressa*). It grows everywhere on clay ridge and sandy bottom, and is, perhaps, the best soil binder that grows. Many farmers dislike it, because of its wiry, stiff stems and habit of crowding out other grasses. It is conceded, however, to be one of the most nutritious sorts and few grasses equal it in fattening qualities. Unless my observation be greatly at fault, this variety of blue grass is far more common than any other in northern and northeastern Ohio. For worn clay soils there is none like it as it will soon prevent washing and forms a stiff, compact sod.

Then we have red top (*Agrostis Vulgaris*), the grass of the lowlands, best suited to moist soils but will grow anywhere, even in sandy loam. Its seed is the smallest of all our commercial seeds, and a little of it goes a great way in seeding down. It well repays cultivation.

The Fescue grasses are not well known in Ohio although they are fast pushing their way into general favor. All varieties are supposed to have been introduced from Europe and wherever the seed has been sown the plant is found to be able to hold its own among native varieties.

There is probably no grass better adapted to those regions where the Kentucky blue grass does not thrive than the variety known as meadow Fescue (*Festuca Pratensis*) or the almost identical species called tall Fescue (*Festuca Elatior*). One has to use the microscope to distinguish them. In some parts of Preble county and elsewhere I have seen these grasses crowding out even the blue grass and taking complete possession. The seed is cheap and can be purchased any where.

Every one knows orchard grass. Many have tried it. Some without a full knowledge of its habits of growth pronounce against it; others, bearing in mind its natural inclination to form tussocks by stooling out from the root have sown it thickly or in conjunction with other grasses and find it most valuable. Orchard grass is not injured by shading. It loves a sandy loam and if properly cultured will make friends everywhere. Sow it thickly and pasture it closely.

Perennial rye grass is the oldest cultivated grass known to agriculture. For more than a thousand years it has fed the flocks and herds of the continent, yet in the new world it has never gained a prominent position. My own experience leads me to the belief that its worth has never been fully recognized and it will well repay cultivation.

There are other grasses well adapted for Ohio pastures. Some of these are native, others foreign. Because of the cost of seed many of these are not practical. Were the demand greater doubtless many seedsmen would keep a greater variety at much lower prices than now obtain. Timothy has not been suggested because it is in no sense a desirable pasture grass. It stands at the top for meadows but for pastures there are many others to be preferred.

The selection of proper kinds of grasses for permanent pastures depends on several circumstances. No one kind can be expected to suit all conditions nor can any given mixture of grasses. The grasses here suggested are tried and tested species and from his own personal experience the writer feels safe in recommending their general culture wherever soil and other conditions are favorable. Another fact should be borne in mind, few grasses attain their most perfect development when grown alone. The best results are always secured when thickly sown together. All of our natural grass lands are found to consist of many species growing together in harmony, covering all the ground and running through the entire season of growth. A pasture once established should be so maintained permanently as long as it is reasonably profitable. For seeding down springtime is best. Fall seeding is often successful but some varieties do not endure frost until firmly rooted. A good catch can be secured with wheat or oats but sowing alone on open ground is to be preferred. Bear this also in mind, that careless scattering of seed on an uncultivated surface will hardly succeed, and the seed must be lightly but thoroughly covered.

A definite formula giving varieties and quantities per acre is a difficult thing to suggest owing to varying circumstances and conditions.

For general conditions on Ohio soils the following is presented.

For Permanent Pastures:

Species.	Pounds per acre.
Kentucky Blue Grass, (cleaned seed)	4
Meadow Fescue "	2
Red Top (Fancy) "	1
Perennial Rye "	2
Orchard "	2
Alsike clover "	3

The clover is expected to serve as a shade to the tender plants during the heat of the summer months until they get firmly rooted. For sandy soils, lacking lime, Kentucky blue grass might be omitted and the extra amount be divided up among the other varieties.

The above seeding is not more than is necessary per acre, the quantity might safely be increased one-half.

From all indications there is coming a revival in stock growing. To accompany it we must have a revival of our pastures. Thousands of acres in Ohio should never be touched by the plow; their greatest value lies in their adaptability for grazing sheep and cattle. The more grass we produce the more stock we can maintain and the quicker we will return to a higher state of fertility in our soils.

A good maxim for us all might be; buy fewer cultivators and more grass-seed.

THE FARMER'S ORCHARD.

By B. H. Brown, Oxford, O.

Every farmer will admit that there should be an abundance of fruit on every farm. But it is a fact I think I am safe in asserting that not on one farm in ten through this great state will be found a supply of all the different kinds of fruit in their season. When we consider the healthfulness of fruit, and also, that without exception all will admit its desirability, it is difficult to account for this fact.

Ohio's soil and climate will produce as fine and perfect fruit as any state in the Union, and the lack can only be accounted for by the fact that it is not planted and cared for as it should be.

In planting an orchard we should remember that we are planting for time and should make no mistakes. If we make a mistake in planting the wrong variety of wheat or potatoes we can correct our error the next year, but the mistakes made in planting fruit cannot be so easily remedied.

The first question to be considered in planting an orchard is *location and soil.* While it is desirable to have the fruit near the house, it is not always practicable. A clay loam with clay subsoil is the best for an orchard. This should be a dry soil; trees will not grow, much less produce fruit, in a cold, wet soil. If the soil is not too heavy a clay, it can be brought into condition by under draining with tile every three to five rods. Again, if not very wet, by back-furrowing in lands the distance apart you wish to set the trees, setting them on the ridge and plowing dirt to them. By this means I have seen some very good producing orchards, when if they had been set without ridging, they would have proved failures. Fruit trees should never be set on low, black land, as the trees make too rapid growth, the buds are not ripened and matured and the trees and fruit buds are often killed in very cold weather.

There are few farmers who have not some land on the place adapted to fruit, and, if it is not near the house, I should plant it back on the farm. We may lose some by having it stolen, but we can afford it, for, if planted under adverse conditions there would have been a complete failure.

The land should never slope to the south or south-west, as the sun shining on the body of the trees thawing them out, and then freezing again at night, will often kill the hardiest varieties. Trees are rarely killed by steady cold but by freezing and thawing. The best exposure is land that slopes a little to the north-east. The morning sun does not injure them, the fruit buds are not started so early in the spring, and the snow lies longer on the land.

After we have selected the location, the preparation of the soil should be the next thing. If the land is new or if by rotation of crops and by manuring, it is in fair condition, it will need only to be thoroughly plowed and prepared as early in the spring as possible. This is generally from the middle to the last of April. I would rather set trees a little late than work the ground when wet. It is a good plan to plant corn the first year. After laying off the field and planting in corn, set the trees every fourth or eighth row, according to the distance you want them apart. In this way little corn is destroyed and you will not injure the trees when planting the cultivated crop.

Perhaps the most important step of all is the purchasing of trees and the selection of varieties to plant. Do not buy your trees of some irresponsible agent that you have never seen and probably will never see again after he has delivered the trees, but go to the nearest nursery that has a reputation to maintain. Pick your own trees that are well formed, healthy, and not more than two or three years old. A tree of this age can be more easily moved and will grow better than larger ones.

In planting an orchard where there has been no fruit, it is well to select varieties, especially apple, that come into bearing early. Some of our best varieties such as the Pippin, Northern Spy, Gravenstein and Bellflower are slow in coming into bearing and one will have to wait eight or ten years before gathering any fruit, while the Early Harvest, Maiden's Blush, Baldwin, Rome Beauty, Smith's Cider, will begin bearing in from two to three years.

I would recommend the following varieties for a family orchard:—Early:—Early Harvest, Red Astrachan, Benoni, Wealthy. Fall apples:—Maiden's Blush, Fall Pippin, Gravenstein, Swaar and Belmont. Early Winter: Smith's Cider, Rambo, Grimes' Golden and Jonathan. Late Winter:—Rome Beauty, Baldwin, White Pippin, Wine Sap, Winkler and Indiana Favorite.

The varieties of pear are but few that I think can be profitably grown. The early varieties are poor in quality and come when we have more desirable fruits. The Tyson is one of the best, rather early, and should be found on every farm. Following this, come the Bartlett and Flemish Beauty, both large and the best in their season. Ripening after these, we have the Buffun, Howell, Keiffer and Lawrence, the last, the best of all the winter pears. In this list the Flemish Beauty is the only variety subject to blight.

There are but four varieties of cherries that can be profitably grown. Dye House, Early Richmond, Montmorency and Wragg. The last named is a seedling from Iowa, very productive, and ripens after all other varieties.

There are a great many varieties of peaches, but I have found there are but few that are productive and of good quality. The following is the list of varieties and time of ripening:—Alexander and Troth (white with red cheek), Elberta and Crawford's Early (large yellow), Honest John and Old Mixon (large white and fine flavor), Golden Drop (sweetest yellow peach), Switzerland (large white, productive), Smock and Solway (very late, yellow and productive). This list includes the cream of all varieties, and will give an abundance of peaches from the middle of July until the middle of October.

The following varieties of plums are considered the best:—Moore's Arctic, Lombard, Genie, Niagara and Damson for purple, Gage for yellow and Robinson and Wild Goose for red. The new Russian plums should not be planted until they have been more thoroughly tested.

Of the varieties of quince, the Orange is the most desirable in every way.

When the trees have been received from the nursery, they should be gone over carefully with a sharp knife, before planting, cutting off from the under side of the roots all that are broken or bruised. Dig holes large enough so all roots can be spread out naturally, and set not more than an inch deeper than the tree grew in the nursery. The distance apart depends on the kinds planted. Some varieties will do well thirty feet apart, while others will need forty feet. Peaches can be set between the apples. Their life is short and by the time the apples need the room their productiveness will be passed. Pears and cherries should be set sixteen to twenty feet apart, and if peaches are planted by themselves, this is the proper distance.

After the trees are planted they should be gone over and carefully pruned, cutting back and thinning out the tops of apple, cherry and pear, cutting off all side branches of the peach, and topping until about three feet in height.

The orchard should be cultivated in hoed crops such as corn, potatoes and beans for at least five years. After this clover can be sown, but should not be removed but cut and left on the ground and pastured off with hogs or sheep. The orchard should be gone over early each spring and the water sprouts and limbs that are crowding taken off. This can be quickly and easily done, and the trees thus formed will produce better fruit and there will be no large limbs to be removed in after years. It is best to cut back annually one-half the growth of the peach. This thins the fruit, checks the tendency of the limbs to break and permits the sun to color and ripen the fruit. Trees trimmed in this way will yield as many bushels, which will be worth double the amount of money per bushel, as if left untrimmed. The practice of thinning fruit is one that is not very well understood by farmers.

If, from some cause, we have a failure of fruit, the trees will make a wonderful growth of wood and fruit buds during that season. The next year we will have such a heavy crop of fruit the trees are either broken or so exhausted that they do not recover perhaps for years.

Now, if these trees were carefully trimmed, forming low, spreading tops, one-half to two-thirds of the crop might be removed when quite small and the trees would produce fine fruit and also form fruit buds for the next year's crop—giving an annual yield.

The Keiffer pear is a fruit that it is imperative to thin. It sets so abundantly that, if one-half to two-thirds of the pears are not removed, the fruit will be small and without flavor. If properly thinned there is no pear more beautiful in appearance and it is of very good flavor.

If the orchard receives the same care and attention that the farmer gives to his field crops, the family will have an abundance of fruit, and the orchard will be as profitable as any other part of the farm.

MAKING, SAVING AND APPLYING MANURE.

By John L. Shawver, Bellefontaine, O.

It has been estimated that the total value of the manures produced in the United States each year approximates two billion dollars. With such a vast amount of fertilizing material available each year there would appear to be little danger of our farms becoming less productive in the future than they are at the present. But we must not forget that about one-half of this value is lost each year because of carelessness in handling and applying the manures. It is certainly not commendable in a people to permit an annual loss of one billion dollars in barnyard manures and attempt to replace the loss thus sustained by commercial fertilizers. Will it not be better for us to produce all the barnyard manures that we can, saving them in the best manner possible, applying them judiciously, and then, if necessary, supplement with commercial fertilizers.

To accomplish the first, we shall want to feed upon the farm all the hay and stover the farm produces, all the grain that can be profitably converted into pork, mutton, beef, butter or cheese, and supplement these home grown feeds with bran, linseed meal, or cotton seed meal, gluten meal, and utilize the straw as absorbents or bedding.

Probably those who sell clover hay at three dollars per ton do not realize that the manurial value of a ton of clover hay is placed at over eight dollars by the chemist. In other words the man who buys the hay gets eight dollars worth of nitrogen, phosphoric acid and potash for which he pays three dollars, while the farmer disposes of eight dollars worth of the fertility of his farm for considerably less than half its value and has nothing for his labor in harvesting and marketing the crop.

There are other crops sold from the farm that rob the soil of its fertility even more rapidly, and the only safe way is to feed to stock on the farm all the grain and provender produced, and sell only finished products in the form of pork, mutton and beef, for which the farmer receives sixty to one hundred and twenty dollars per ton and yet sells only six to ten dollars worth of fertility off his farm.

The dairyman who sells a ton of cheese for one hundred and fifty to two hundred dollars sells only about twenty dollars worth of plant food. If he sells milk on the city market he receives forty to seventy dollars per ton for his product yet sells about two dollars and eighty cents worth of plant food. If he makes his product up into choice butter he receives four hundred to six hundred dollars per ton, yet sells only about fifty cents worth of the fertility of his farm.

But the best portion of the profits is sometimes found in the manure produced; not, however, when it is permitted to accumulate in an open barnyard, subjected to exposure to air and sunlight, as well as to the washing rains and melting snows;

not, when thrown out beneath the eaves of the barns, where it is subjected not only to the elements above named, but to heating which causes the loss of ammonia, the most valuable portion, and that for which we must pay the highest price when we buy commercial fertilizers; neither is it so when the greater portion of the liquid manures are permitted to be lost. The liquids are from fifty to eighty per cent. more valuable than the solids, and these can most cheaply and most profitably be saved by the use of an abundance of good absorbents. The litter used for bedding should be perfectly dry or as nearly so as may be, and for this reason should be kept in shelter. Dry wheat straw will absorb two hundred and twenty pounds of liquid manures, for every hundred pounds of the straw, while water-soaked straw from a straw stack will practically absorb none.

The manure should be hauled directly to the fields and spread, unless a manure shed or covered barnyard is provided for sheltering it. Where spread upon the fields the first rain carries the soluble portions down into the soil. But sometimes the fields are not in fit shape to draw the manure over them without injury to the soil, and sometimes the ground is frozen very hard and covered with snow, so that if covered with manure a rain may carry off much of the valuable plant food into the creeks.

The best method is to provide a covered barnyard with a straw loft above. Thus the same roof protects both the manure and the straw stack and at the same time provides good comfortable quarters for the stock. The manure thus accumulated retains practically all its value. The manure, as it is taken from the stables, is spread evenly over the surface and tramped down by the stock. This prevents heating and as the temperature must reach ninety degrees to liberate the ammonia this most valuable portion is retained. The tramping also prevents any portion except the mere surface being exposed to the air and the action of the aërobic organisms which penetrate the manure only so far as air has access. These organisms cause the rapid fermentation and great losses. The anaërobic organisms, which work only in the interior of the manure heap where the air cannot penetrate, act more slowly and the carbonic gas there formed soon permeates the entire mass and fermentation is arrested.

Sometime previous to the date at which it is desired to draw the manure to the fields, say the middle of February, the hogs may be given access to the manure shed a portion of each day and they will at once begin working over the heap, fining it up and getting it in good shape to haul, and the hauling may be done when the ground is frozen. The manure is not water-soaked or frozen and the men work under shelter while loading, so, even though it may be quite cold or even a biting wind blowing, the work is really enjoyable to one who likes to see a fine lot of manure going upon his corn field where he will soon see the benefits of its application. If in an open yard, it is likely to be late in the spring before it can be hauled, and if then turned under, one does not get the full benefit from it. It should be on the surface four weeks or longer before the ground is plowed; the soluble portions are then carried into the soil by the rain and the vegetable matter is incorporated with the soil.

The manure that must remain in an open yard until after harvest has lost fully half of its value, and the remainder is then usually placed on sod intended for corn the following year. But for the benefits secured from the mulch thus provided it is safe to say the effects of the manure would scarcely be worth considering. Some even lose the mulching benefits by throwing the manure into heaps where it remains till the hired man goes out to plow, and he is told to scatter the manure while he rests. Some of the heaps have heated and the ammonia is lost; in all, the soluble portions have been carried down into that small spot of soil covered by the heap, and the hired man has nothing but crude fiber to scatter.

To summarize let us feed all the grain and provender we can upon the farm; use dry absorbents to save the liquid manures as well as the solids; keep the accumulating manures under shelter in a level, compact mass to prevent losses by leaching, heating and undue fermentation; spread upon the surface as soon after drawing as possible; draw upon the fields only when it may be done without damage to the soil; draw at least four or more weeks previous to breaking, that the rains may carry the soluble portion into the soil; last but not least, aim to cover as much soil each year with a coat of homemade fertilizers as it is possible to do.

GROWING HOGS FOR PROFIT.

By J. AL DOBIE, Gutman, O.

One of the first requisites in growing any animal for profit is a correct idea of its nature, and its requirements as to food, care and management. The hog is, perhaps, when properly fed and cared for, the most profitable animal on the farm, and yet he is the least understood. Many farmers really believe he will do about as well with scarcely any shelter, with nothing but corn for food, and very indifferent treatment generally, as if sheltered in a dry, warm house, and given the best of food and care.

Only a few years ago the prevailing idea was that he was made up of about equal parts of stubbornness, contrariness and appetite; that the unclean spirit that Christ cast out of the man and allowed to go into the herd of swine was still paramount in the animal's makeup all through his miserable existence, from the time his first faint squeak was heard in the farrowing pen to the day when he was served upon the table; that a hog was nothing but a hog anyway, and all that was necessary was to put him in a muddy lot, with some boards thrown across a fence corner for shelter, to dump some corn over to him two or three times a day, and then trust to luck and moon signs for the balance.

Thanks to farmers' institutes and farm papers, these notions are rapidly passing away, and in the mind of every intelligent farmer the fact is becoming recognized that there is no animal that will respond more readily to kind treatment than the hog; that no animal has the same power of assimilation, or will make as many pounds gain for the food consumed as the hog. And the man who has a family to support, or is trying to lay up some money with which to buy a home, or is striving to make improvement on his farm, or is struggling to pay off a mortgage, or any other debt, will find the hog a better friend and helper than any other of the farm animals. But in order to do these things he must have a chance:

As a preface to what may be said on shelter, allow me to say that no man can afford to keep a brood sow a whole year for one litter of pigs. To be profitable she must, like a piece of machinery, be run to her full capacity. If two litters are raised each year, one of them must necessarily be grown in cold weather, when dry and warm quarters are indispensable. The shelter need not be an expensive or elaborate affair, such as is sometimes seen in books and papers. In fact, these complicated piggeries are usually a disappointment to their owners. It may be never so cheap and temporary, but it must be clean, dry and wind proof and have a reasonable amount of suitable bedding, for the comfort of any animal has a great influence on its general health and thrift.

In order to establish some facts in regard to the effects of cold on fattening hogs, Mr. E. M. Shelton, of Kansas, some years since conducted a series of experiments on ten pens of pigs. Five were placed on the south side of a tight board fence, five feet high, with no other protection except straw nests. The other five had dry, clean, wind proof quarters. Both lots were fed twice a day all the corn they would eat up clean. The experiment was begun in the fall and continued until after mid-winter. From the first the hogs that were properly sheltered made much the best gain, though the difference was not so marked in the mild weather, when the temperature was only about freezing, as in the severe winter. During four weeks of the coldest weather, it required something over five pounds of shelled corn to make one pound of pork in the sheltered pens, while outside, it required eleven pounds of shelled corn to make one pound of pork. But the most amazing difference was during a time when the average temperature was but little above zero. Then, in the sheltered pens, five pounds of shelled corn still made one pound of pork; while with those not sheltered it required two hundred and twenty-six pounds of corn to make one pound of pork. In other words, a bushel of corn fed to hogs properly sheltered gave over eleven pounds gain, while every bushel fed in the open lot was practically thrown away. The same thing is occurring on thousands of farms all over the corn and hog belt of the United States.

I once bought a beautiful young brood sow of a man, I will call Mr. A. After bringing her home I was told by a shrewd neighbor who was looking at her that she was a very fine specimen, but when I bought her of Mr. A., I ought, if possible, to have bought an interest in Mr. A.'s swill barrel, for there lay one of the secrets of his fine strain of hogs. This last statement was literally true.

We are too apt to depend too much on breed and not enough on management. Stuart says: "It may be laid down as an axiom that breeding alone can produce nothing beyond what is inherent in the animals coupled, and their ancestors." We may exercise skill and judgment in mating the sire and dam, and the result may be an individual combining the good points of both and superior to either one of them, but we may depend with great certainty that nature never produces something out of nothing. It is food and management that makes a beautiful specimen of any strain of blood.

A skillful feeder will grow a more perfect animal out of a half-blood than an indifferent feeder will out of one with the longest and most fashionable pedigree. "This position does not undervalue pedigree, for it took a long effort of both breeding and feeding to establish the fixed characteristics of the improved breeds, but it is folly to magnify the pedigree extravagantly, and forget the essential agency that established the improvement and made the pedigree valuable."

It is not my purpose to try to boom any particular breed. Every man has a right to his own preference. It is sufficient to say that if a hog is wanted that will attain to a great size, is quiet,—in fact rather lazy and sluggish—that will fatten readily at any age and yield a large proportion of lard, either the Chester White, the Poland China or the Duroc Jersey will fill the bill. If a hog of medium size is preferred, one that is very prolific, always lively and active, that will hustle for his own living in pasture or woodland or in following cattle, that yields pork of the highest quality with a large proportion of lean, the Berkshire or the Belted Thinrind will certainly answer the purpose.

But whatever the breed decided upon, the greatest care should be exercised in selecting the brood sow. It is one of the fundamental laws of breeding that the male parent determines mostly the outward form and structure, while the female chiefly determines the internal structure and the constitutional strength or weakness of the offspring. Assuming that these premises are correct, it must be apparent to every one that the judicious selection of the female is of prime importance, and that success is not assured without it. It is probably best to defer the selection until considerable growth has been attained, that a more nearly correct judgment may be formed as to what her build will be when matured. At this time she should be of a form known as rangy, that is, the opposite of compact; of loose and open build, long, yet quite broad on the back, with short neck and head, fine ear heavy jowl, deep sides and heavy hams. She should be large and roomy, from healthy stock, a greedy feeder, and of great vitality, as indicated by large girth just back of fore legs. Coarseness is allowable in the sow, yet there must be symmetry and a well developed female appearance. Above everything else, she should be of a stock that is well known to be prolific, as this characteristic is hereditary without a doubt.

She should never be bred under eight months of age, and twelve would perhaps be better, as the act of reproduction is a heavy drain on the vitality of the young animal. During the period from breeding to farrowing time she should be fed rather liberally on foods rich in nitrogen, such as bran, middlings, oil meal, etc., and have pasture or green food, if possible. She should not be allowed to become overfat, and she will not, if given proper feed in reasonable quantities, and she should be compelled, if necessary, to take plenty of daily exercise, which is of the greatest importance.

As farrowing time approaches, she should be separated from all other hogs and placed in a dry, sheltered pen, and be provided with a small amount of short hay or straw for bedding. Her feed at this time should consist for the most part of loosening slops, as costiveness and consequent feverishness must be carefully guarded against. When the critical time arrives, I believe it best to leave her severely alone and let nature take her course, for if the treatment thus far has been correct the chances are a thousand to one that both she and her offspring will do well without any disturbance or fussing on the part of the attendant.

As the sow is apt to be feverish at farrowing, she should have access to plenty of pure, fresh water, but should have no food until she appears to be hungry, and then only a few handfuls of bran or middlings stirred in a pail of warm water. Do not tempt her to eat, and be in no hurry to crowd her with food, as for the first few days the pigs require very little nourishment. Generally the tendency is to crowd them too much at the beginning, and then stint them when started, when they should be fed liberally. After the first week, the ration should be gradually increased, and by the time the pigs begin to eat she should be brought up to full feed and should now have all the milk producing food she will eat up clean three times a day. After the third month, feed twice a day.

We cannot insist too urgently on the importance of feeding the pigs largely through the dam. The drain on the vitality of the sow suckling a litter of eight or ten healthy, vigorous pigs is tremendous. There is no food for the growing pig that is equal to the dam's milk. The flow of milk, therefore, should be increased by every possible means, that the pigs may be kept growing and thrifty, and that the sow may not become a walking boneyard and have to be given a long time to recuperate before she is in condition to be bred again. The way to accomplish this is to feed liberally, three times a day, a well balanced ration. Pigs are usually fed too much corn and other foods too rich in carbohydrates. Instead, they should be fed nitrogenous or protein foods, as they require much more nitrogen than old hogs By this means we secure a greater growth with a given amount of feed, and there is a more perfect development of bone and muscle, which indicates a condition of the system least liable to disease.

In my own experience I have found that, if nothing better can be done, it will pay to sell corn and buy bran, middlings and oil meal. These, with corn meal, wet with milk as far as possible to a creamy consistency and fed in such quantities as they will eat up clean, and at the same time appear to be satisfied, will give excellent results.

The hog's stomach needs some kind of fibrous food to act as a divisor of the more concentrated foods and allow the gastric juices to permeate the entire mass, and thus greatly aid in the digestion of the whole. The necessity of providing hogs with pasture and green food is becoming more and more apparent each year, even in this corn producing district, and is unquestionably an important factor in the profitable production of pork. The liberty of a pasture field affords the growing pig that exercise so necessary to health and development, and the succulent grasses are rich in muscle and bone forming material, are loosening and cooling to the system, and have a great tendency to keep it free from disease. In his natural state the hog is a grass eating animal, and the loss sustained by farmers each year in not following the dictates of nature in this respect is simply enormous. In short, keeping hogs entirely on concentrated foods is as unnatural as it is unprofitable. A wood lot is a most valuable adjunct to the hog pasture. Here he can find an abundance of shade, can root among the leaves to his hearts content, and find a large amount of plants, roots, insects, etc., that are just suited to his nature.

Healthy swine, that have been kept in such a manner, and for such a length of time as to develop a good sized, properly formed frame, will, when put on full feed in the early autumn, lay on flesh very rapidly.

But the change from grass and other bulky foods to an exclusive corn diet must be gradual, and the feeding must be done with care and judgment, or the digestion will be so impaired that they can never afterward be fed with profit, and some may even be carried off by that convenient scapegoat, hog cholera.

After they have been brought up to full feed it requires but little skill to feed and handle them successfully. If they have space sufficient to afford them comfort, cleanliness, and a moderate degree of exercise; if they have access to pure fresh water at all times, and are supplied with as much salt, charcoal and ashes as they want, it is then only necessary to be guided by this most important principle, viz.: that the hog has an appetite beyond his power of digestion. It was the practice of our forefathers to keep corn by them at all times, but the elm-peeler and the thistle-digger of those times had an amount of vitality and hardiness far in excess of the improved breeds of today.

There is no use denying the fact that the quiet disposition, beautiful forms, and splendid fattening qualities of our improved breeds have been brought about at the expense of vitality and ruggedness. So it matters not at what stage of the fattening process, the hog should never be fed more than he will eat up clean before leaving it. I know from experience that the hog treated as here indicated will thrive and keep healthy without the use of drugs, such as sulphur, copperas, etc.; that he will seldom, if ever, be off feed; that there is but little to be feared from disease; and, if sold at any reasonable age, his weight will exceed one pound for each day he has lived.

And, lastly, the owner will have reasons, substantial reasons, to bless the day when he resolved to study the nature and requirements of the hog, and, for the money there is in it, if not for humanity's sake, to treat this noble animal with consideration, and even with kindness.

THE POTATO.

By J. L. ROUDEBUSH, Stonelick, O.

The common or Irish potato, so extensively cultivated throughout most of the temperate countries of the civilized globe, contributing, as it does, to the necessities of a large portion of the human race, as well as to the nourishment and fattening of stock, is regarded as of little less importance in our national economy, than wheat, corn or rice. It has been found in an indigenous state in Chili, on the mountains near Valaparaiso and Mendoza; also near Montevideo, Lima, Quito, as well as in Santa Fé de Bogota, and more recently in Mexico, on the flanks of the Orizaba, in Virginia, New Mexico and Arizona.

The history of this plant is involved in obscurity, as the accounts of its introduction into Europe are conflicting. It was, probably, introduced into Spain in the early part of the sixteenth century, from the neighborhood of Quito, where, as well as in all Spanish countries, the tubers are known as papas. The first published account of it, also accompanied by an engraving, was at Seville, in 1553. From Spain it was taken to Italy, where it was called the truffle. It was sent to Clusius at Vienna in 1598, and soon spread all over southern Europe, particularly Germany. The claim that it was introduced into England from Virginia by Sir Walter Raleigh is not well founded. It was no doubt introduced by him into Ireland and first planted on his estate, near Cork, about the year 1586, and into England accidentally, on the Lancashire coast, about 1595; but its cultivation was not general until 1725. Gerard in his Herball, published in 1597, gives a figure of this plant, naming it *Batata Virginiana* to distinguish it from the sweet potato, *Batata Edulus.* This, in my opinion, is why it is supposed to have been brought from Virginia. In 1663, the Royal Society of London recognized its value for food, and recommended its general cultivation. It was introduced into Massachusetts Bay Colony about 1630, and into Virginia and the Carolinas about 1720. In my opinion, the cultivated species is a product of the Chilian Andes. It is true, as before stated, that some species of the potato are indigenous to other parts of South and North America, but they might prove on cultivation to be quite different from those we are familiar with. The writer saw three species in Arizona and two in New Mexico, hence feels safe in assuming, at least, that to Aztec civilization we owe the development of the edible species. Different names were given to varieties in its early history, such as "rough coats," "red coats" and "flat whites"; the last variety was introduced from France. The year 1812 is an important one in the history of the potato in the United States. In that year Joseph Gilkey, of Mercer county, Pennsylvania, originated the Mercer, or Neshannock potato, named after the creek on which he lived. It was so much superior in quality and yield to the other varieties then grown, that its cultivation became more general and remunerative. Of any of the six hundred varieties originated since, in my judgment, it was the equal in quality and yield. In southwestern Ohio it ceased to be planted as a field crop after 1860. It was succeeded in 1863 by the peachblow, a potato of a different type, a strong, vigorous grower, prolific and late keeping. On the clay uplands of southwestern Ohio this was a decided success, but in 1883 it "ran out."

The potato delights in a rich soil with an abundance of moisture, and an average temperature, during the growing season, of 60 degrees, Fahrenheit; such conditions are found in Ireland, Germany, the irrigated valleys of the Great Basin and the lake regions. As a site I prefer clover soil, first; tobacco ground, second; and corn fallow, third; whether it be an alluvial soil of the valley, or clay of the upland. I aim to plow, as soon as possible in March, to the depth of six to eight inches. If clover sod, a light harrowing will be all that is necessary in the way of preparing a seed bed, and sometimes I omit that. I like to plant from March 25th to April 10th, if drilled, in shallow furrows, two feet, ten inches by twelve inches, covering deep. I furrow shallow that the potato may be nearer the surface where it is warmer, not stand in water if heavy rains come, and where at setting and maturing time, if dry, showers will reach the roots. I cover deep to prevent freezing; I drill only Early Ohios; the later maturing varieties are planted in rows, two feet ten inches by two feet six inches, dropped by hand and covered with a coverer. In other localities the later varieties are drilled.

As to varieties; for the early or Cincinnati market (distant nineteen miles) I prefer the Early Ohio, a little later the magnum bonum. Both are of the desired shape, prolific, good keepers and best quality. I generally, but not always, change the seed each year, using either upland or northern grown. Without a diagram I will not attempt to describe my method of cutting to one good eye by beginning at stem end.

My first cultivation is when they first break the crust, which I call covering. This can be done either with a bar plow, double shovel, or walking cultivator. I go twice in the row, if a bar or double shovel is used, throwing a light furrow on the potatoes and dragging off at once. This destroys all the weeds that have started and pulverizes the soil. I follow this, as soon as the potato tops are two inches high, sooner if there is a crust, with a walking cultivator, with small bull tongues near the potatoes and large ones in the center.

This is followed in a few days by the same implement with regular shovels in center, and again with full complement of shovels. I "lay by," by going once in the row with a medium sized single shovel, just shoving the soil; this is my method when planted one way. Care must be taken in setting the bull tongues and shovels so as not to ridge. If planted both ways, I cultivate both ways, until the third cultivation, when I use a double shovel, going crossways twice in a row. I do not advocate late plowing, but early and often, never allowing a crust to form. With us Early Ohios are generally ready to market by July 1st. Until the vines are nearly dead, I dig by hand, afterwards with a two horse digger, a potato plow. Our objection to potato raising in the valley is this, they are "laid by" early and hauled to market in wagons which is a slow process, and as a result our potato fields are a hotbed for weeds. An advantage is that we follow with wheat and get best results. Ordinarily I raise two thousand bushels. Observation and experience have taught me that site, soil, and salesmen, are essential to success. With us insect pests have cost extra labor and money. I spray for the Colorado beetle using a knapsack sprayer. I find lime water a good thing as it prevents the Paris green from burning the tops. Scab has been levying a tax but in the future we expect to control it. The blister beetles will leave if the Bordeaux mixture is used as a spray. Many farmers hand pick and use Paris green mixed with gypsum or other material in a dry state with good results. From 1820 until 1860 we exported from one hundred to one hundred and seventy five thousand bushels annually. Now we oftentimes import that many, off seasons I suppose, when many plant in the moon and fail to get back in time to dig and market them. We produce about three hundred and twenty five million bushels annually and with an increasing population, potato growing, with improved varieties, methods of cultivation and harvesting, housing and marketing, must be profitable as each year must provide for itself.

TOWN CITIZENSHIP AND ITS RELATION TO RURAL IMPROVEMENT SOCIETIES.

By JOHN GOULD, Aurora Station, O.

The proper presentation of this subject necessitates the consideration of it from many sides, but if we take up one phase of the question and discuss it from the standpoint alone of the farmer's obligations to his town we shall have best performed our task, so I shall simply confine my remarks to the ground of the farmer's obligations, and what he may do to benefit the town and, in doing this, benefit not only himself but his family as well. Perhaps a better way to put it would be, what can the farmer do to first build himself up, raise himself in the scale of improvement, and, as an outgrowth of this self betterment, assist in the work of town improvement?

The farmer owes the same to society and the realm nor is his obligation less than that of any other man or class. He is a member of society; he is a citizen and a creator of public sentiment the same as any other man, and his sense of law, order, decency and all around morality should be no greater and no less than that of the community in general about him. In the country towns the farmer outnumbers all other classes; many dwellers in our towns and villages, indeed might well be classed as farmers for they are directly associated, for weal or woe, with the farm and the farmer. I assume, therefore, that what I may say, well or ill, has an interest to every dweller in the rural portions of the state; any improvement in the farming element of a township has its almost direct influence upon every person in that township; so what the farmer may decide upon as an improvement for himself should be accepted by the others as an improvement in which they are to share and, as sharers, they should give it their support and influence, and should in turn contribute suggestions for the good of the community.

In the short space allotted me it is possible to take up a few, only, of the primary principles that underlie our farming republic; I cannot attempt to trace its history and development, but must begin with the problem as we find it today, and by confessing that we are far short of perfection. The discussion of farm and rural improvement everywhere proves this, and the asking everywhere of the question, "What can farmers do to have better society in home and township?" is judgment rendered that the desire for improvement has become more than a latent longing for something better.

In the beginning I may be allowed this argument. It is a common remark that farming does not pay as well as it did a few years ago and scores are asserting that it is manifestly right to abandon it at the first opportunity, and many are in fact doing so. I do not maintain that it is paying great dividends, but what other industry, with capital no greater than that invested in the average farm, is paying handsomely? How is it in the average township? Where are the shoe shops, the wagon shops, the cabinet shops, the carding machines, the saw mills, the grist mills, the occasional small woolen mill, that were once scattered over our state, in total a score to the township? It is a fact that nearly all of our country manufacturing industries have become extinct because they no longer afforded a living; they were not transferred but were actually left to go to decay, which incurred a total loss of capital; a blacksmith shop or two, a few grist mills, a day's journey apart, complete the present list of our country factories. Have the farms suffered extinction in like ways? We are not using fewer manufactured articles, purchased once at home, rather more, in fact, but now they are made far away by large corporate industries, with systematized labor, aided by the most wonderful mechanism, which has reduced the skilled hand, that once with rude tools made the closest joint and did the most beautiful ornamental work, to a mere attendant of a machine which, with wondrous execution, fashions the same pieces even more minutely and with the speed of many men.

Now, while the shops of the town have disappeared or been abandoned the farms have not and their producing power has in most cases been fairly well maintained, but the farmer's market, now, instead of being almost at his door is, possibly, on the far side of the world; if the farm is not doing so well it is largely because of the shifting of the industrial classes to the great manufacturing centers, which forces the farmer to sell in far away markets; markets which are now—owing to the rapid freight trains and cheap rates—open to the world and to a competition never dreamed of twenty years ago, that of the bonanza farming of the West, those gigantic specialties of wheat, stock, wool, beef and pork.

But, after all, I reason something like this; farms and farming will always continue to exist; we as farmers will continue to do about the same things which we are now doing, the great cities will keep on growing and keep on demanding about the same things to eat and drink and so increase the demand, and if we take the right course our advantages will be increased. To keep apace with the demands of the times it becomes our duty to raise the tone of our towns and to give to our farm homes a better, more attractive look; to cultivate lawns, lay out driveways and make them beautiful. All this would give to the city and town a more harmonious look; to the country dweller it would be a direct benefit, adding largely, not only to his contentment, but to that of his family as well; it would be a restorative, to a large extent, for that vague unrest which sees only in the city the desires of life and its enjoyment fulfilled; it would be a great leveler of the wide distinction that seems to exist between city and country and make the life of the farming towns so much more attractive that we should more nearly retain our own. As there is, every year more and more, an apparent desire upon the part of city people to migrate countryward for homes, a general country improvement—even to the putting on of smart airs—would add much to this movement and attract where now indifference prevails. From these premises I speak for rural improvement, rural improvement societies, a general uplifting in the country and a sentiment that gives hearty endorsement to this purpose, that will assist in giving an air of prosperity, even a citified air of blue blood, about house, lawn and farm, in place of the so often heard spirit of carping and insinuation, as if it were a crime to pick up, clean up, beautify one's home and surroundings. This carping is a disease that should be eradicated as soon as possible by public sentiment, true and loyal, and the after attainments will be all the more enjoyable.

It goes without dispute that the farm is not paying as well in dollars and cents as it once did. It is true, also, that the farm does not afford great opportunities, except to a small minority, to gain wealth, distinction and fame, but is this not as true of the shop, the store, the machine works or the cloth factory? Where the thousand find employment, the one, only, finds more than a living; while the thousand live, the one, only, gains what may be called success, but of varying degree and few, indeed, are they whom the world stops long to mourn or regret when death overtakes them; it hurriedly throws the soil above their coffins and then hastens again into the whirl and rush of business to make up what may be called lost time. Still through all this warp and woof of life is here and there a man to whom we ascribe the meager word, success, which analyzed means this; that which this person did was done well; a measure of thoroughness, an appearance of tidiness, a display of workmanship, whether mental or physical, gained for this person recognition and we hear of him outside of the little round of local and neighborhood gossip. So with our farmer; if he does things well, is conspicuous in some lines of his work, is above the average, he is a leader in thought and action, and though recognition may come grudgingly from some, often from many, still it is this man who is making his mark upon the community and is bettering his locality, in his way, quite as much perhaps as if he taught from rostrum or pulpit. It is out of such material that, in natural ways, comes the thought and example which at last become crystallized into town improvement societies, and the well considered practices and purposes of the few become the accepted desire and the executed will of the many and then we say, "How that town is picking up!"

In this town improvement, from the farmer's side, there is a personal and a community effort, or its reverse, that is closely analogous. Individual men and individual localities are alike; each is dominated by ambitious purposes, or by a listlessness that means retrogression. All success, however general it may have become, was the effort of some one person in its conception, and its growth has arisen from the fact that others seeing it and admitting its superiority have adopted it, in whole or part, and there has been a general improvement as the result; so I say that, in our farm methods and improvements, success, and its effect on the community, is measured by the attention one gives it and the faith manifested in it, as well.

If one goes about his work with the expectation of succeeding he is all the more likely to meet with success; much more than another who is ever discussing the discouraging features connected with it, continually wishing that he were engaged in something else, and, as a rule, saying, "If I could only have a steady salary I would be independent of all trials and setbacks," forgetting that this is a plain confession of inferiority, that living is then dependent upon some other man's ability, when a little resolution and vim might have been this complainer's part in upbuilding and improving. One of the drawbacks in rural life, and it is a growing "habit," is that one becomes willing to lose his identity, to sink individualism, to seek a place where another can plan for him; thus the man becomes a machine, and ordinary place seeker, and puts himself where improvement is out of the question and all his faculties are another's to command; then, when this head master fails, as fail he does early and often, the dependent is thrown out upon the breakers and in self-preservation is ready to grasp any plank, even if it be shorter and narrower, affording a much more slender hold on life. In this, the country is not a very frequent sufferer, but in the severe straits into which farming has fallen, it exists, and it needs a co-operative effort to drive it away and to help each citizen to personal attainment and distinct individuality. I may add that pride of locality is a strong aid toward accomplishing this result.

I know I will be pardoned if I digress at this point to remark, as a side thought, that the present dwellers of our townships are not characterized by the strong, distinct individualism that was once so conspicuous; an individualism of men and women, an originality of thought and method that made these men and women stand out among their fellow beings like gigantic pines upon the mountain side. These grand old people had thoughts of their own and did not wait for an expression from others; they never stratified into the indistinguishable average, but each could do and dare for himself; hence that sturdy intelligence that made, moulded and advanced localities, the far reaching influence of which we cannot too strongly admire. Imitation, modified by the progress of the times, would not lessen our value as citizens nor restrict the possibilities of making our lives tell in the bettering of home and neighborhood.

One of the things that prevents the realization of all that is desirable in township improvement is the conception that the farmer's citizenship is builded on lower levels than that of other classes, and that if a farmer cannot attain great things at a single bound they are not to be sought for in a lesser degree, for only great possibilities should be attempted; another, that all which goes for better home adornment and town prosperity costs money, when the facts are that there are a thousand and one things that can be inexpensively done by hand, and influences set afloat by tongue which, in the aggregate, if put in execution would revolutionize the social and domestic life of our nation and make our roads and their appointments rivals, in their rural beauty, of Euclid avenue. Did you ever realize that the chief adornments of that famous thoroughfare were made up of four things, grass, trees, flowers and labor, with small stones laid in order for ballast?

It is not half so beneficial for a farmer to originate something great which would sound around the world like a Dingley bill, or stop a bond issue, or annex the Sandwich islands, as to start by example some small reform which would prove epidemic among his townsmen; such as picking up the litter about his house and barns and beautifying his lawn to the point of making it safe to visit him after dark without the precaution of carring a lantern and a life insurance policy. Well kept homes and tidy appointments about them and well ordered farms mean well kept towns, and when the towns are well taken care of there will be a well looked after state and nation, all the outgrowth of a better ordered citizenship, the foundation of all great nationality.

It is not all of town citizenship to be interested only in national affairs or to attempt great political reforms, (many farmers seem to think that all greatness grows out of politics) but let us first make our homes what they should be and we shall then be better able to keep our town politics pure and town affairs economically administered; these kept above reproach, it will be easy to have the affairs of state and nation correspond. If the fountain head is pure and the entering side streams governed by the same laws of sanitation, political jobbery and spoliation will cease, and the great rural element will be the pioneer and conservator of right and the farm will have won its greatest victory.

Treating our small towns as farming communities and recognizing, as I have, that the interests of the township are held in common, I may be allowed to point out what I think would greatly help us on in citizenship and at the same time promote our common elevation and be the power that would beget many improvements, for it is not improved dooryards, alone, that we need, but also a general, all around shake up in our methods and practices and, pardon me, there could be an improvement in our moral tone that would do us no injury.

Our rural neighborhoods could be greatly improved by treating our youthful population as *citizens*, impressing it upon them so that they might realize their responsibility and feel that they have moral and other obligations to carry and maintain as well as the older people. This lesson of obligation should begin with the boys and girls in their teens, that they have individual duties to perform in the upholding of law, order, sobriety, decency and general character building; that the practices that go along with decorum, respect for morality and the common usages of society, look as well when practiced by boys and men, by girls and young women, as when exercised by their elders. The usages of rural citizenship should be respected to the extent that young men should not be excused for sowing wild oats in public view and should forever be debarred the threshing of that crop on the moral commons. I do not believe in prohibiting youthful pastimes and amusements, but the world affords that which amuses and gives ample recreation, without debasement or actual blows at morality, and the country should be the great exhibition ground of this school of better citizenship. This good citizenship should be taught in our homes and in our schools; all good citizenship is founded on the home, and the more perfect the conditions of that home the more sure will the "swarming," from the home hive give to the state desirable citizens. One of our faults in beginning home making is, that where we live is not really a home, but a place to stay, a family barn, until the day of wealth comes, away in the future, and during all these years one is forever hearing, "When we get rich we will have as good a home as any one," forgetting that as the years go by the dream fades and the boys and girls go out into the world with a half formed idea of the true home and a longing for splendor, which, they imagine, can only be found in the palatial houses on "the avenue." Here is something that can be remedied; make a home first, and then, as the good Book tells us, "shall all these things be added to you."

We in the country have spasms of reform; not a steady persistent quest of it, but, when law and decency are overridden to the point of desperation, a move is made, the nuisance is abated and we settle down for a long nap again; we see this, that, and the other wrong, perpetrated day after day, often flagrant violations of the law, and weakly wish that some one would make a move, be brave enough to cause a general rising up of the populace, make these things not only odious but crimes, and as such, punishable by law.

Another thing that blunts our country citizenship is the presence of petty rings, political and otherwise, which delegate to themselves all wisdom and dictate, direct, and often command, to carry their plans. Boards of education that are dominated by one or two members; caucuses "packed" so that "our men can get the pull," trusting that the fellow who is never seen, and whose opinion is never asked, will keep on voting straight; and so on down the line; people lose all interest, enthusiasm and, almost, pride in their town when everything is cut and dried for them. To know the opinion of "Squire Jones" and who the leading men are to favor, what they want and what they will not have, is to know the final result; this stands in the way of all town improvement and progress; such a condition stratifies a town and the mass says; "It does not make any difference what I say or think," and there is no harmony of action. Now and then there comes an upheaval of dis-pleasure, but it lacks strength, the old ways return and a longer interval of rest follows; then it is that the visitor after an absence of twenty years, says, "Why! there has not been a change in town since I left, twenty years ago." Why has there been no change? What we want is a live town improvement society, with a membership as large as the town, with wide awake interests and meetings held when the wants of the town can be discussed without fear or favor; we want committees appointed to confer with township authorities and work in accord with them; we want this society to be to the town what a board of trade is to a city.

A farming town should have its live farmers' club, holding regular meetings, where the farm and its needs, and not politics, could be and would be discussed, farm improvements suggested and resolved upon and this club should hold conferences with the improvement society. A great field for co-operation for these societies might be found along the line of good roads; this is a coming improvement in which every one should be interested and should do everything in reason to further the matter. A good rural improvement society might, working in conjunction with the proper authorities, do wonders along this line, and do away with the jealous feeling which finds expression in the words, "if the road cannot be fixed in front of my house and farm first it shall not be fixed anywhere." What is wanted most of all is public spirit in the rural districts and the taxation necessary to carry out the improvements will be less burdensome for the unity of feeling. If the whole of a rural community were actuated by the spirit often exhibited by the few, the results would be surprising and nothing could work upon the public spirit as might a rural improvement society, actuated by a mutual impulse to carry out plans for the good of the town; the highway is a splendid place on which to display this impulse.

We could make a most radical improvement by a change in our school system, by abolishing the outlying school districts, where the attendance is very small, lessening the outlay for repairs, fuel and teachers and adopting the more modern idea of concentrating the scholars of the township in a central graded school, establishing a full course of study in harmony with the graded schools of the cities, where four teachers could do better work than the eight or ten now necessary. The high school is an educational power in which every inhabitant can and should take the highest degree of pride, and we owe it to every scholar in the township to let him share in its benefits. The city school is only ten schools merged under one roof and we have the power, if we will use it, to have schools in our country towns that will stand the equals of any in the state. Shall we have this or largely fritter away our educational possibilities?

One of our duties, as citizen farmers, is a little less active observance of the Sabbath and a more general attendance upon church services. Whether or not we are in accord with the expressed belief of the minister, it is a valuable idea for a farmer to get into his good clothes at least once a week and take his place, by presence at least, on the side of truth, right and morality. I do not wish a return to the Sabbath of the Puritans, but I do say that if some of the work and recreation were left out we would come much nearer attaining good citizenship. It is not so much that we salt the cattle, go visiting, have bicycle meets and the like on Sunday, but the fact that we wait all the week so that we can do them on Sunday. Railway trains run on Sunday, it is true, but that fact creates no excuse for the opening of shops and stores in our rural towns on Sunday morning, or for the boys taking their guns with them when they propose to walk across lots to ——— church.

Rural improvement societies should have the idea of better cared for church edifices conspicuous and, if there is no membership in existence to keep up some of these buildings, let the society take hold of the matter and remedy it in some way. Nothing speaks so loudly against a town as the sight of one of these neglected and tumbling down churches. Turn them to some good account and useful purpose, or take them down and beautify the places where they stood, converting them into little parks, with trees and flowers, something to delight the eye if the time for refreshing the soul there has passed.

In our rural towns the pulpit might get nearer the people by adopting the five or ten minute prelude in which the live issues of the day can be discussed, without fear or favor, especially affairs at home, and if now and then some of our neglects of duty as citizens were touched upon, or certain lines of desirable action pointed out, in a spirit of fairness and fraternity, I think the following sermon would be all the more enjoyed and we would find very often the line of duty and practical theology running in parallels of close proximity.

While the quality of country and farm homes is, as a rule, growing better every year, the encouragement of a rural improvement society would be healthful in stimulating more to follow and adorn their homes, not only the outside, but the interior as well; encouragement would come also from the complimentary words of the passer by and from the inducement for the city dweller to make his summer home in such a locality. Once the summer cottager in a town was looked upon as an invader to be barricaded out, but now the sentiment leans the other way and a rural community points with pride to the fine houses and grounds of the city cousin; soon it is found that his nice lawn is made of nothing but what is found on all farms, only put together in a more harmonious way, and is made attractive by work, not sleight of hand, and so it is often copied by others, until finally the community becomes proud of the suburban appearance of the locality. There might be less use made of lawns for horse pasture and a few more mowers might be bought. Nothing will quicken town improvement more than the breaking out of a lawn adornment craze; it will soon extend to cleaning up fence corners, taking the slack out of loose wires, many a housewife will take time to plant flowers about the door and cannas will supersede burdocks.

Some of our duties have been touched upon in this paper, others might be mentioned but many of them suggest themselves. We are largely engaged in discussing, just now, how to make more money, but there is a broader question for the farmers to study today. Our citizenship and what it stands for is broader and longer and should occupy more of our time. The farmer stands not only as the one who is to add realty wealth to this country, but he stands today, as never before, the guardian of the destinies of the country at large; he stands, to a large extent, as arbitrator of the moral and political conscience of the people; he is the grand jury to whom is referred, year by year, the questions that affect not only you and me but the whole population; thus he becomes the moral tribunal of the nation. Are we as farmers prepared to well decide these questions? Farmers' institutes and similar meetings are doing more to bring about this desirable state of affairs, to foster a better understanding and expand the relations that we bear to each other and the Republic in general, than anything that has happened to us in the course of our lives. May we know our duty and the obligations devolving upon us as citizens and farmers and act well upon them; may we become a co-operative power for good and benign influences and have the satisfaction of knowing that we, in doing our part, have made our homes, the people about us, and the town better and brighter, our social and moral life stronger, more symmetrical and complete with good deeds; and, though few of us may accomplish deeds that shall win earthly fame, yet for the doing and faltering not, may we some day hear the words, "Well done—thou hast been faithful over a few things," from the kindest voice in all the universe and gain a continuing peace that shall abide when the earth itself shall have become the dust of the ages.

THE FARMER IN RELATION TO OTHER INDUSTRIAL CITIZENS.

By DR. F. B. MCNEAL, Alcony, O.

In treating this subject, I do not wish to be understood to bewail the lot of the farmer, neither do I intend to portray his life as one of drudgery and slavery. There is perhaps no place in the world where farm life is surrounded with greater advantages, and where farmers' homes are supplied with more pleasures and luxuries than in the United States. But in the rapid development of the country, in the phenomenal increase of the wealth of our people, in the great accumulations of money, and the power which money exercises, has the farmer kept pace with other classes of our citizens? If not, why not?

The beauties of farm life, the independence of the farmer's calling, his communion with nature and the healthfulness of his occupation, have been sung in the ears of the American farmer, until they have well nigh lulled him to sleep, whilst others have outstripped him in the race of life, and much of the result of his industry has been appropriated by others without compensation or reward. Since 1840 the wealth of this country has increased more than a thousand fold, while our agricultural wealth, has increased less than three hundred fold. In the discussion of the cause, result and relief of these conditions we should, as much as possible, divest ourselves of all prejudice and without bias discuss the different environments surrounding our industrial life.

For more than a score of years there has been an almost continual shrinkage in all agricultural values. Our lands are less valuable, our prices have been declining and our taxes are higher. While these conditions have existed with the farmer, let us inquire whether the same conditions have surrounded the other industrial and monetary interests of our country, or whether they have borne equally with us the burdens of state, for we should ask only an equal chance with them in life's battle; we can ask for nothing more, we should be satisfied with nothing less. The vast accumulations of wealth in the hands of individuals in later years in this country has been the wonder of the world. Many can remember when the millionaires of this country could be counted on one's fingers, today their numbers can scarcely be ascertained; the multi-millionaire only is accounted the very rich individual and some have reached hundreds of millions. Among these not a single farmer stands today a millionaire made such by the operations of agriculture. The capital invested in farm lands, especially in the older states, is worth less by 40 per cent. than it was twenty years ago. The capital invested in many other pursuits has increased a hundred fold and in some cases a thousand fold. The representatives of values bartered in a single city in a single year are greater than all the agricultural land values in the United States. The average net profits of our lands have been less than 4 per cent. for ten years, while the net profits on manufactured goods in 1890 were more than 20 per cent. The net profits of a single railway in Ohio, in a single year, were a million and a quarter of dollars. The profit accruing to this kind of investment was demonstrated a few years ago when there was paid six millions of profit on the construction of one railway to prevent the operation of a competing line. The profits of corporate companies other than banks, railways and insurance companies are very hard to ascertain, but their success may be judged by the readiness with which foreign gold is invested in them, and the prices paid for their stock. An ex-president of a State Wholesale Grocers' Association said to me, not long ago, that he was credibly informed that in the city of London alone more than eight billions of American securities of this kind were held. This at 6 per cent. would make an annual interest charge of four hundred and eighty million dollars,—a sum almost sufficient to run this great government of ours,—paid as tribute to a single foreign city. It is estimated that the aggregate paper evidence of indebtedness of every kind and character in the United States, will reach forty billions of dollars; this at an annual interest charge of only 3 per cent. would reach the enormous sum of one billion two hundred millions of dollars. Is it any wonder, then, that prosperity is slow to make herself manifest with such a load of annual interest tribute clogging the industries of our country? While receiving less return for our labor, and less profit for our investment than other classes of our citizens, our rates of taxation have been increasing, and the difference between the valuation of real and personal property in Ohio has been constantly increasing since 1826, when personal property was first placed on the tax duplicate. In 1826 the rate was seven mills, in 1895 it was twenty mills. In 1826 the difference between the value of real and personal property was thirty-four million dollars, in 1895 this difference had increased to six hundred and eighty-seven million dollars. As the greatest part of agricultural valuation must always be in real estate, and the greatest part of other industrial valuation must be in personal values, it follows that this increasing discrepancy must result in detriment to the farmer. The entire personal valuation for 1895 was only a little over five hundred million dollars, and only about 40 per cent. of our grand duplicate. The exact amount of evasion of valuation of personal property cannot be obtained.

1st. Because no public records are made of our corporate companies, and no reports to the state are required.

2nd. Because no record of the ownership of personal property is kept.

This is the reason that so many money lenders prefer personal to real estate security. If I lend my neighbor five thousand dollars, and take real estate security, I must record it, and there stands the evidence of my investment; if I take personal security, I put the evidence of it in my pocket and there it ends, unless the tax inquisitor happens to catch me. Your county seat may issue a hundred thousand dollars of improvement bonds, no local capitalist will buy them, they may be negotiated in Massachusetts, paid for with money furnished from home, the bonds brought back and placed in a vault within the corporate limits of the town, and who is the wiser? Your county may issue bonds, advertise for bids, no local capitalist will offer a sealed proposal; a syndicate of your citizens may employ a foreign brokerage firm to make the highest and best bid, the syndicate gets the bonds, the broker gets his commission, and each year a broker from some other point may present the coupons and draw the interest.

The owner of all these values may forget the fact when the assessor comes around and thus year by year escape taxation, and there is no redress save by the espionage of an informer. In my own county there is perhaps more than a million dollars in this kind of investment, yet the tax duplicate shows only sixty thousand dollars in bonds, joint stock companies or otherwise.

One of our railways was purchased a few years ago at three hundred and fifty-one thousand dollars per mile, and placed on the tax duplicate at nine thousand dollars per mile; the net profits of this same road were four thousand, eight hundred dollars per mile in a single year, or more than fifty per cent. of its entire valuation for taxation. The annual net profits of a street railway in one of our cities is more than the entire outside capital invested in it. The same is true of many of the street railroads throughout the state, yet none of these pay taxes on anything but their road-bed, power-houses, etc.

In view of these things it is not surprising that the valuation of property for taxation should show a great excess of real over personal property. The following percentages were taken from the census of 1880 (because I have not had access to the census of 1890) and the statistics of Ohio do not separate town and village personalty from farm personalty. I presume the percentages differ very little from those of 1890, and are as follows:

Farm real estate	78 per cent.
City and town real estate	22 per cent.
Farm personal property	49 per cent.
City and town personalty	51 per cent.
Total for farm property	72 per cent.
Total for city property	28 per cent.

The valuation of municipal realty in 1880 was a little less than three billion dollars, a sum that would not buy the ground on which greater New York now stands, (only two years ago, a lot fifty by about one hundred and fifty feet in that city. sold for seven million, five hundred thousand dollars), and there are three cities in the United States, the real estate of which would sell for more than the total municipal valuation of the United States in 1880. Think of it, fellow farmers; your real property valued at almost four times as much as all the other real estate of the country, and all other monied investments valued at only 2 per cent. more than the chattels on your farms, and you pay taxes on almost three-fourths of the grand duplicate.

The increase in the products of the labor of the American farmer in the last generation is unparalleled in the history of the world, and does not admit of comparison with any other nation. In 1845 we produced fifteen million tons of grain; in 1895 this was increased to eighty-nine million tons. Our meat, dairy products, hides and poultry were valued in 1840 at two hundred and seventy-five million dollars; in 1895 they were valued at one billion, six hundred and thirty-five million dollars. This makes the increase in our products about seven fold. Let us see if our earnings have kept pace with this increase in our products, or if the increase in our earnings has kept pace with the earnings of those engaged in other industrial pursuits. Mulhall, in his "Wealth of Nations," gives the increase in earnings from all sources from 1840 to 1894 at a ratio of three hundred and thirty-one to three thousand one hundred and sixteen, while the increase in agricultural earnings were as one hundred and eight to four hundred and eighty-eight. Thus it will be seen that while our products increased seven fold, our earnings increased only a little more than four fold, and during the same period the increase in the earnings of other industries was more than a thousand fold.

From 1850 to 1890, the wealth in the cities and towns of this country increased from three billion dollars to fifty-one billion dollars; during the same time the agricultural wealth of the country increased from four billions to sixteen billions. While agricultural wealth increased four fold, urban wealth increased nearly seventeen fold, or more than four times as great an increase. Why is this vast difference in the returns we receive for our industries? Why this great inequality in the burdens we bear in common with our fellow countrymen? Is it because the farmer is less industrious than others? No, none work more hours or harder than he; the average amount of produce per hand is four times greater in the United States than in Europe. (In the United States it is eight tons per year per hand, in Europe it is two tons.) Is it because the farmer is more extravagant in living? No, perhaps no other class is as economical as the farmer, certainly his living costs as little as any other class of our citizens. Can it be that he has less ability than others? Certainly not; were we to acknowledge this to be true we would become the inferior class, fit only to be the slaves of those whom we would declare superior to us in intellect. The history of this country demonstrates that more than a proportionate number of our greatest statesmen, wisest philosophers, and truest patriots, have come from among the followers of the plow. Is the farmer's integrity of a lower grade than that of his fellows? No, it is not egotism for the farmer to assert that as a class he stands at the top of the moral standards of his country. These four cardinal virtues, industry, economy, capability and integrity, coupled with the inalienable rights of man to "life, liberty and the pursuit of happiness," form the God given bases of success to human energy. With the proper exercise of these there can be no failure, except through accident, natural calamity, or some dereliction of the government under which we live. Of the accidents affecting our depressed agriculture, there are none to be mentioned, save, perhaps, that of over production in our own country, or under production in the countries dependent upon us for their supplies. These cannot explain our difficulties, for if the prices of our commodities depended upon our export trade it would follow that, as our exports increased, our prices would increase as a natural result; never in the history of our country have our exports increased more rapidly than in the last two decades, yet, with a few slight exceptions, prices have continually decreased throughout the same period.

No natural calamity, of fire, flood or pestilence, has befallen us to account for our disaster, hence we are forced to the third source of our trouble, namely, the evils that have crept into our government. Though we have the best form of government that ever existed among men we believe its functions have not always been exercised in the interests of the people. Vicious legislation may exist from no legislation or from the enactment of bad laws. Examples of the former are when the United States Congress, regardless of the petitions of thousands of her citizens, neglected to pass a law to prohibit speculation in futures, in the prices of farm products; or when it failed to enact laws to effectually check *quasi* public corporations from exercising their corporate powers in the interest of those having them in charge, regardless of the rights of the people whose domain they have appropriated.

Speculation in the agricultural products of the country has reached such a pitch that scarcely a food product has escaped the gamblers touch, even the bread we eat, is controlled by the same baneful influence. Scarcely a baking establishment in the country can run except by the sufferance of certain baking companies. Immense fortunes are accumulated, and thousands of men live in princely style on the profits thus accruing, every dollar of which comes off the price of your produce, or out of the pockets of those who consume them. The different stock boards throughout the country find no effectual check to railroad wrecking or gambling in their stocks, regardless of the rights of the people whose domain they have confiscated for right of way, or of the brawn and muscle that have built our vast system of internal commerce, or the still greater energies that have developed the immense productions of our land, which form the basis of prosperity to all our avenues of transportation.

Of the bad laws that have been enacted there has been no class more pernicious than the subsidizing of public improvements. The United States has granted to railways more than two million of acres of the public domain, to aid in the construction of more than fifteen thousand miles of road, requiring actual settlers to pay for every acre thus donated, in order to obtain the right to settle on adjoining sections; add to this the subsidy bonds given to the same roads, and you will find that more than a billion of dollars have been given to corporations of this kind, with almost no check to the corporate powers thus granted. The pernicious system thus inaugurated has been followed up through National and State Legislatures, through county, city and town governments until there is scarcely a hamlet in the country that can get a creamery within its limits without a subsidy, and often the subsidy is the only real money invested in the enterprise. But it is needless to enumerate, incidents might be multiplied without number.

Out of all this want of legislation and bad legislation, has arisen the almost innumerable corporate bodies of the country, granted special franchises and powers by the government, with very little responsibility to the power that gave them life and with very little respect for the people from whom their patronage must come, their management has become corrupt, their stock the plaything of stock boards and individual speculators, their special privileges and franchises looked upon as the individual plunder of those who have them in control; thus vast amounts of capital centering in the hands of a few individuals, the combining of operations, the pooling of interests, and formation of trusts, have made the United States the grandest gambling place of the world today, for Wall street is no less a gambling center than the pool rooms of our race courses, whose jockeys are better paid than the professors of our colleges; nor are the grain pits and stock exchanges any less so than the prize rings, whose participants are better paid than the best preachers of our land. Speculation and transfer of representatives of value without production, is the incubus that sits upon our body politic and upon our citizenship today. The millionaire, made such in a day without adding to the wealth of the community, is made such at the expense of so many additions to the pauper element of the country.

History proves that in the distribution of wealth in all countries these two classes have increased practically together. Is it any wonder then that the farmer, in his isolation and industry, has failed to keep pace in life's race for wealth? Is it any wonder that the tramp is more frequently found at our doors than formerly? Is it any wonder that the gage of wealth, which was a million in 1850 should have reached a hundred millions before 1900? Is it any wonder that the world stands in awe and amazement at the colossal fortunes piled up in this country within the span of a single lifetime? And is not that amazement turned to distrust and apprehension when we contemplate the means by which these conditions have been brought about? But it is the political aspect of these questions that comes to us with gravest portent and greatest apprehension. The first century of our nation's history is past; her achievements on the field of battle and in the halls of congress, have been the pride of her citizens; her mining, manufacturing, and skilled mechanical industries, coupled with her great, prepondering, interest in agriculture, have built here a civilization, richer, purer, freer and nobler than the world has yet known, but be it remembered that republican form of government is yet an undemonstrated experiment; the problem of uniting the government and the governed, in the same citizenship, has never yet been finally solved; republics have arisen, lived centuries longer than ours has existed, and then ended in failure and ruin; we may well pause and inquire whether we are not following the same courses which led them to their downfall. In all ages the most serious menace to popular government has been the governing of large cities, and who will say that the politics of our large cities is not a menace to our government today? It is here the gravest doubts arise as to the possibility of permanently maintaining the Republic; here the vicious elements of society congregate in greatest numbers and scheme to control politics in the interest of lawlessness and crime. Each decade shows a greater increase in the population of our cities and a corresponding decrease in the population of the rural districts. In the large city the money king and the pauper are brought closest together in greatest numbers; the one recognizing no influence in politics but that which money can buy, the other ready to barter his manhood, for the pittance which will buy him drink. Here is where soulless corporations find the source of their power to hold every avenue of transportation and transfer and, year by year, pocket the fruits of your toil, and back of that to buy the legislation that shall perpetuate their robbery.

These evils are neither self limiting nor self correcting; like a loosened train on a down grade, the farther they run the greater will be their momentum, and the harder it will to change direction. The ballot in the hands of honest citizens is the only peaceful avenue to success.

Let the farmer then arise in his might, join hands with every honest son of toil, uniting with the good and true from city, town and country, and declare that this is not the kingdom of caucus, the empire of corporations, or the realm of money kings, neither is it the mobocracy of communism. Show to the world that America is still the government of the people, the nursery of equal rights and the home of liberty, drawing our inspiration from Him whose coming was heralded from Judea's mountain with "Peace and good will to men," believing that "all men were born free and equal," standing up in the conscious rectitude of our purposes, looking squarely into the eyes of all men, demand that the legislation of the country shall be such that the money invested in agriculture shall return an average profit equal to the average profit of other investments; that the time, talent and energy expended in tilling the soil shall be equally rewarded with the other pursuits of life: that we shall be required to bear only an equal share of the burdens of our government; that official emoluments shall be only a fair remuneration for the service rendered; that in the distribution of official position and patronage the industrial classes shal receive the recognition their numbers and importance entitle them to; that integrity and capability shall be the only passports to political preferment, and that every officer be required to rigidly enforce the laws given him in charge to execute. When these things shall have been accomplished, then may we hope, that, when the second century of our National existence shall have been completed, the principles of the declaration of independence shall be as sacred as they were a hundred years ago, and the flood tide of our national prosperity flow on and onward without ebbing.

SOME REFORMATIONS IN AGRICULTURE.

By Geo. E. Scott, Mt Pleasant, O.

In the light of the age, transformed from forest to farm and farm to field, amid a million of homes, the hewers of early agricultural industries would stand in awe at the wonders that would confront them today. From the sickle to the cradle, the cradle to the reaper and the binder, a steady march has marked an inventive age. The original wooden mould plow has left and in its place the modern chilled plow turns the steady rolling furrow, or sometimes the riding or the gang plow finds employment in the more level regions.

New modes and implements for cultivation have superseded the crude ways and cultivators of the past. Planting devices have been perfected and machinery for the cutting and curing of hay and the storing of the same in the quickest and most improved order.

Almost every device that genius can invent has found an advent in the hands of the susceptible farmer.

Much of the inventive genius that has found the daylight of an introduction has been of value to the industrial age; but many of the modern inventions are of little value to those who purchase them, hence the public has been imposed upon. Farmers have indiscreetly expended hard earned dollars for many articles of high priced machinery or implements that proved of no practical use, and the money was spent and the object purchased left to decay under the most favorable circumstances, and the farmer left poorer, but, probably wiser.

Great have been the reformations in the introduction of labor saving inventions, but can it be gainsaid that too many farmers have overshot the mark by purchasing too many of even what seemed to be labor saving machines when these were bought on credit, laying the foundation of debt that has threatened thousands of farmers with the loss of their homes.

Right here there should be a great reformation among American farmers and only such implements and machinery as are a necessity be purchased, except where the ready cash is at hand to pay for the article. This would be reformation in the right direction and the farmer would soon find that while he may have less machinery to shelter, he will have more cash to his bank account.

Too much machinery has been purchased for the purpose of breaking, planting and cultivating larger areas, resulting in overproduction, leaving the farmer stocked up with costly machinery and low priced farm products.

We could add reform in this regard and while possessed with less acres, less invested in implements, and more careful improvement of the soil added, it is possible to have done less labor, have less invested and by concentrated effort have more cash for a year's operation. It is a strange fact that while we have made such wonderful strides in the distribution of labor saving devices during the last two decades we have not kept pace with them in the improvement of our farms and the making of money as did our parents who did not have so many complicated machines and implements for the rapid dispatch of farm labor. Our trouble has been that we have not shared our desire for internal improvements with the love for the external. We have not studied those problems which to us are dry and unpleasant. Our acres have suffered while we gave too much attention to the outward impress of the farm, when a careful study of how plants grow, why and how soil fertility may be maintained and increased would have placed us high upon the road to success.

The institute system has broken in upon the reckless and careless methods of farm work and hundreds of farmers who, in years gone by, gave little or no thought upon the science of soil preservation are today deep thinkers and practitioners along these lines. Their faith in the outlined work as taught in open institute has crowned the efforts with wonderful success.

Here one has reformed by removing many inside fences and farming that portion of the farm exclusively without pasturing, and keeping the balance in natural grasses for permanent pasturage. To these farmers great advantages have accrued. The tramping of soil by stock prior to or after cultivation, is, and always will be, detrimental to the farm on which it is practiced. Wherever this theory has been taught it has had staunch supporters among those who have practiced it, and who would not go back to the old idea of small fields and the costly luxury of fencing.

Along with this newer idea of dividing the interests of the farm has emanated the greatest reformations among all others, that of shortening rotations and the use of clover as the basis of farm prosperity.

At this point we find ourselves at the most interesting portion of this chapter. We always feel greatly interested in the mechanical labor performed upon the farm, but when we touch the soil and begin the work of recuperating it from a famished condition into which it has been plunged by ignorant and impractical handling, we feel a thrill of pleasure in the soul. If we must suffer from the depletion of fertility in our acres, why shall we not rejoice at the restoration of it again, especially when that return has come by extraordinary efforts of our own, that have come to us by study, research and experiments, obtained through the magnanimous channels of our institutes, experiment stations and the untiring efforts of the agricultural press. Only in recent years have we been cognizant of the fact that *clover* has inherent power to secure a generous supply of nitrogen from the air through the soil. This theory came with the present epoch of scientific agriculture, and with it thousands of farms are returning again toward their original degree of fertility. Most of the farmers who have enlisted in this great army of reformers have ceased to sow anything but clover for good and forcible reasons.

Timothy has been eliminated because it has no power to create fertility, no power to penetrate the subsoil and bring to the surface available elements of plant food that otherwise must lie there useless, and which always throws around the farmer a temptation to lengthen the period of rotation and sell crops of it away from the land. This latter feature always results in extended loss by extracting the most valuable available plant food in the soil, which the reversion of wheat, clover and a short rotation would otherwise have continued or made available, and by continued cropping the humus of the soil being extracted, the particles of earth become closer together and a tenacious condition is the result.

A long period of purchasing high priced, complete fertilizers has taught farmers that with the low price of farm products they cannot longer continue the practice.

With the use of clover on an average soil, experiments have demonstrated that in three years as many growths of that plant has stored in the soil from the air, one thousand three hundred pounds of nitrogen worth one hundred and ninety-five dollars, aside from the available conditions resulting to the phosphoric acid and potash through the wonderful renovative power of the clover plant, from the hour of its germination until its final decay.

Gaseous compounds are formed within the soil that neutralize acids, leaven the earth and increase the porosity of land and by continuous turning under the accumulation of organic matter darkens the whole upper strata of the soil.

Much has been taught about clover, much learned and much yet not known will be demonstrated in other years. Some of the greatest reformations that we enjoy on our farms are attributable to its increased use and may be summarized as follows:

The surprisingly low cost per acre for seed makes it a cheap fertilizer. Its adaptability to the average soil of the north temperate zone proves that it was intended to be the great leverage power that will lift the farms of this zone out of the decline they have sunk into. It has proven to us that with it we can practically bar the purchase of nitrogen, the costly part of a complete fertilizer, thus saving at least ten dollars on each ton of that general commodity. As a complete covering to the soil it has provided a means of greater bacterial influence there than any other plant and as a blanket, holds a uniform temperature, conserves moisture and defies the escape of animal compounds.

The first crop as a feed we find equal to the best for all kinds of stock either growing or matured and the residuum returned to the land in the second crop loses none of its fertility since the coat of humus on the surface holds the rich liquid until it finds its way into the porous soil.

Some of these later day reformations are sure to make grand encroachments upon the follies of the past and the reading, thinking investigating farmers will blend these reform ideas with their future operations to a degree that will produce such changes on their farms and in their homes that the first decade of the twentieth century will be termed the beginning of the age of agriculture.

THE MAINTENANCE OF FERTILITY IN THE FARM.

By T. C. LAYLIN, Norwalk, O.

If we wish to maintain the fertility of our farms, a knowledge of the various soils of which they are composed is necessary. The soils form the basis of all our operations and our success will depend upon the skill we use and the knowledge we have of the capabilities of each kind. We should be familiar with their characteristics, know for what crops they are best adapted and understand how best to treat them.

If a farm under good management does not produce good crops, or if the production is yearly becoming smaller, it is a sure indication that there is a deficiency of some of the elements necessary to the growth of plants. Sometimes all these are present but in an unavailable condition, on account of excess of moisture. On land of this character draining is a necessity. Well drained land will produce good crops in those seasons when wet land only produces failure. There is perhaps more lost to farmers by wet land than all other neglects of the farm put together. It is in those years when the majority of farmers fail that good farmers are the most successful. Any one can raise good crops in a good season, but to have good crops when many fail is the test of a good farmer.

Underdraining is one of the means of the improvement of fertility because it assists decomposition of elements of plant food. It enables the plant roots to go deeper in the soil in search of nourishment thereby increasing the store of available food. It makes the land more porous permitting the air to circulate through the soil, for wherever the water passes through the earth, passages are left in which the air enters. It is also a fact that the soil is less liable to bake in seasons of drought and the land being mellower, it will withstand dry weather better. This increased porosity renders the soil a better non-conductor of heat and cold and the roots of plants are less liable to injury by reason of freezing and thawing. It economizes labor by permitting earlier working in the spring and by allowing the work to proceed without interruption on account of surplus water.

In addition to drainage, *manuring*, *rotation* and *tillage* are operations that are necessary to the preservation and restoration of fertility. While our lands were covered by forests, or a dense growth of weeds and grass in a state of nature, they kept their fertility, and increased it. The luxuriant vegetation grew from year to year taking some of the elements necessary for its growth from the earth, but much also from the air. The leaves of the trees, the twigs and in time the bodies themselves died and fell to the ground, thus returning more to the soil than they originally took from it. We take from nature no worn out lands. Her system of agriculture is very different from that of man's. We remove from the soil the crops we cultivate while nature returns more than she takes. Unless we imitate her by returning at least a part of the product or its equivalent, the soil must in time become barren. "We must feed the land that feeds us" or abide the consequences.

The ordinary rotation of corn, oats, wheat and clover, selling the corn, oats and wheat, returning only the fodder, hay and straw after their consumption by animals, is exhausting and except upon those soils prodigal of fertility is inadvisable. It may be said that it is impossible for us to ever return enough manure to balance this loss. This is one of the great problems that the American farmer has to solve. The trouble that we are now meeting, the farmers of the eastern states encountered years ago. Crops raised upon western land are produced with less labor and less expense than in Ohio. The virgin fertility of American land, the improved machinery of today, the rapid facilities for transportation, and the ready markets of the world for grain have led the farmers to draw upon the land for those products that most exhaust the soil, and this tide of exhaustion had its beginning in the East, but like the star of Empire, it is rapidly taking its course westward. The time is coming when the western farmer, whose only song has been one of abundance, will reap the effect of such prodigal and destructive farming, but how can it be avoided? How can restoration be made?

1st. By keeping more stock consuming upon the farm its products, selling its fertility in its most concentrated form and in the least possible amount. I know that prices received for animal products are not entirely satisfactory, but when we take into consideration the improvement of the soil it may pay after all.

2d. By resorting to the practice of green manuring. We know that nature adds to the fertility of the soil by decaying vegetation. We can imitate her by growing crops for the purpose of plowing under. Although vegetable manures are not so energetic in their action and nature as animal, their effects are more durable. The loss of fertility in the soil is largely due to the lack of humus and plowing under green crops adds this property. The decay of a heavy sod furnishes us an example of this. Clover, where it can be grown, is the best crop for this purpose althoug pease, corn, rye, buckwheat, and even oats are used. Living plants contain the same elements as dead ones. If the crops that are grown upon a soil are permitted to return to it its fertility is increased, for in addition to the elements that the plants take from the earth, those that it tákes from the atmosphere and the rain are added to the land. The great value of clover lies in the fact that besides drawing nitrogen from the air it reaches down into the subsoil with its long tap roots and appropriates fertility; both organic and inorganic, and decaying, leaves them in the surface soil. All kinds of manure have a mechanical effect upon the soil. A good manure spread upon heavy clay land, plowed in and mixed with it lightens the soil; decomposing in connection with its particles, it imparts to it these elements of a gaseous nature. Decaying plants act in the same manner although more slowly. Turning under a heavy crop of forage or long manure just before seeding upon light soils is not to be recommended because it leaves the land in such a loose condition that in seasons of drouth the crops will suffer and unless the manure is thoroughly mixed with the soil the capillarity is destroyed by breaking the connection with the subsoil. For such land the manure should be well rotted and applied upon the surface; although no new principle is added by decomposition it is better fitted for plant food. Manure is wasted by fermentation because the carbon is consumed and the ammonia escapes. Properly regulated and mixed with absorbents to take up the gases there need be no waste. In composting manures the different kinds should be mixed together, and the whole kept sufficiently wet to prevent fire fanging.

Commercial fertilizers are powerful agents in the restoration of worn out land; soil so poor that it will not grow paying crops may be so benefited by them that a good crop of clover may be grown and when this is secured we are on the high road to success; but the temptation is strong to rely solely upon their use, and the result is, the land is robbed of the little humus left; their continued use when not in connection with barn yard manures or green crops renders our clay land harder and harder as each year passes. Many of the mineral elements become exhausted, or, in other words, become unavailable. Scientific men have analyzed the different soils and have found that in a foot of clay there are enough of these elements to last for two hundred years; how, then, can they become exhausted? I can account for it upon no other hypothesis than that those elements although *there* are not available for our use. When we consider that for thousands of years nature worked upon the surface of the rocks with frost, water and air to pulverize and decompose them, getting them ready for plant use, it is very easy to suppose that man, by continually carrying off the crops he grows, exhausts the soil. The ashes of plants consist of these elements, and their application to the soil is beneficial; clover brings these elements up from the subsoil. The consumption of plants by animals uses up the organic parts and returns the inorganic elements to the soil. The pasturing of grass lands adds to its fertility, and especially pasturing with sheep. The fertility of a farm can not be kept up or increased without *rotation.*

Although one may not notice any diminution of fertility for a time, yet the stock of *humus* is constantly becoming smaller and will finally fail if the same crops are grown continuously upon the same ground. This process takes from the soil those elements necessary for the growth of that particular plant, and the slow decomposition by nature cannot replenish them. Given sufficient time, creative agencies would restore lost fertility, but the energy of man cannot wait for nature. "Grain crops are exhausting, grasses and clover are ameliorating." Hence, grain and clover should alternate. And the oftener a clover or grass sward is plowed the more humus is returned to the soil by the decay of the roots. Summer fallowing was in earlier days much practiced and was followed by heavy crops of wheat. This practice did not increase the fertility, but, on the contrary, consumed it, because the continued stirring of the soil helped the sun and air to decompose the elements there. Thus, tillage becomes an agent in the process of unlocking fertility stored in the soil. Its objects are:

1st. To turn under the grass, plants and weeds, placing the soil so that these may decay and become food for the plants.

2d. To loosen the soil for the purpose of making a proper seed bed and mixing the manures with it.

3d. To cultivate and stir the surface so that young weeds may be destroyed and the atoms of earth may be exposed to the action of the elements in order that we may assist nature in decomposition. Thus tillage enables us to produce better crops though in reality the plant food is in the soil and working the ground simply makes it available but we can not depend upon tillage alone. There is no such thing as reclaiming worn out land without manure.

Fertility often depends much upon the under lying subsoil. If this is an infertile, tenacious clay, its admixture with the surface is injurious; in all such cases deep plowing is not desirable. Many farmers are so wedded to the theories learned in their earlier days, that it seems llke heresy to talk to them of shallow plowing. The motto of Benjamin Franklin: "Plow deep while sluggards sleep and you shall have corn to sell and keep," has led many astray. Most of the subsoil in my vicinity is of this character, while it may possess some fertility, the close, compact tenacity of its clay being mixed with the surface makes it hard and difficult to work. I have been an advocate of shallow plowing all my life and have had an opportunity of judging of both systems, as some of my neighbors practice deep plowing and I have been unable to see that they raise any larger or better crops than I.

I desire to mention one piece of land that was plowed over thirty years ago with a Michigan subsoil plow to the depth of about a foot which was nearly ruined and continued efforts on the part of its owner to bring it to its former condition have been well-nigh fruitless. That there are some soils that will bear such treatment I will admit; yet am of the opinion that the extra amount of labor needed is not duly compensated. One of the objects of the farmer is to get the best possible returns for his labor. An extra amount of labor, unless rewarded by an extra return, is not profitable. The manufacturer of today depends for success under fierce competition on economy of production. So farmers of our time under like competition must depend upon like economy of production.

Another object of the farmer is to get the best possible return for his labor without exhausting the fertility of his soil and to restore fertility when impoverished in the most economical manner and shortest possible time, always remembering that every atom of fertility sold from the farm with every bushel of wheat, corn, oats, on every pound of meat, butter and cheese, does not come back to us from the clouds. Human experience has discovered the gradual loss of something which neither rain nor sunshine can restore; also that the fertility of the soil is increased or diminished in proportion as the crops are returned or removed; that the virgin soil contains humus sufficient for many crops; that each successive crop exhausts the soil; that to maintain the fertility of our farms up to their original standard requires every effort that the wisdom of man can employ.

EXPERIMENTS WITH COMMERCIAL FERTILIZERS ON POTATOES.

By C. G. WILLIAMS, Gustavus, O.

Five years ago I began a series of experiments in the use of agricultural chemicals on potatoes. Potatoes grown in a three-year rotation, preceded by clover and followed by wheat; soil, a clay loam.

Lest there be some misunderstanding as to what I mean by "agricultural chemicals," let me say that I mean simply unmixed fertilizing material, some of which, as acid phosphate, is already chemically treated, while other materials are only finely pulverized, as raw bone, tankage, etc. All this material, as offered for sale to the farmer or small manufacturer of fertilizers, is ready for use when it is thoroughly mixed in the desired proportions.

I have used commercial fertilizers in the growing of potatoes quite extensively for fifteen years. For the last six years I have been purchasing the unmixed material and mixing it upon the farm. My fertilizer bills are much less than formerly, and results from its use rather more satisfactory.

The particular problems which I have been seeking to solve in my plot experiments are: 1. What elements of plant food are needed—nitrogen, phosphoric acid, or potash; used singly, in a two-part mixture, or in a complete (all three) fertilizer? 2. Which of the various forms of nitrogen, phosphoric acid and potash on the market is on the whole the most desirable?

When I began these experiments I had been using a complete fertilizer for my potatoes, analyzing about three per cent. nitrogen, seven per cent. phosphoric acid and eight per cent. actual potash. Believing that nitrogen was an essential constituent of a potato fertilizer and having various forms of nitrogen from which to choose, I began the use of a complete fertilizer in which different forms of nitrogen were incorporated. The first year this experiment was confined to nitrate of soda and dried blood; the next year tankage was added. The same amounts and forms of phosphoric acid and potash were used in each formula, and the same *amonnt* of nitrogen, the change being only in the *form.*

WHAT FORM OF NITROGEN?

Complete fertilizers having nitrogen:

In the form of dried blood yielded	184	bushels per acre.
" nitrate of soda yielded	169	"
" tankage yielded	162	"
No fertilizer (average of four years) yielded	116	"
Gain of blood over nitrate of soda	15	"
" no fertilizer	68	"

While tankage makes the poorest showing, yet when the cost of nitrogen in tankage is considered the disadvantage largely disappears; entirely disappears as compared with nitrate of soda. Owing to the fact that nitrogen can be purchased in Ohio cheaper in tankage than in any other form, my present belief is that it can be used in connection with dried blood to advantage for spring crops—that is, if nitrogen is needed at all. For fall use in wheat when we do not have to get results as quickly, the growing season being so much longer, I depend upon tankage altogether for nitrogen.

DISSOLVED BONE BLACK OR ACID PHOSPHATE?

Complete fertilizers were used as above, the variation being in the kind of material which furnished the phosphoric acid.

The bone black mixture yielded	175	bushels per acre.
The acid phosphate mixture yielded	171	"

The difference here is so slight that it hardly needs to be taken into consideration. One form seems to be about as acceptable as the other. I have decided to use that carrier which will furnish phosphoric acid for the least money. At present this is acid phosphate.

COMPLETE OR PARTIAL FERTILIZERS?

While I had found that the complete mixtures which I had been using on my potatoes were giving value received and something more, yet I thought very likely I might be using more nitrogen than was necessary, particularly as I was growing my potatoes on a clover sod. I accordingly began the following experiment with two-part mixtures, the results of which, for the last four years, have been as follows:

TWO-PART FERTILIZERS; WHICH?

Phosphoric acid and potash	175	bu. per acre.
Nitrogen and potash	140	"
Phosphoric acid and nitrogen	150	"
For comparison:		
Complete fertilizers (average of the blood and nitrate of soda plots)	176	"

It seems evident from this that certain two elements used together will grow as many potatoes for me on clover sod as will the complete mixture. Notice that it is important which two of our three-horse team we hitch together. Nitrogen seems to be unable to render much assistance. It should be stated that I used the same amount of each ingredient in the two-part mixture that I did in the three and no more; did *not* increase the quantity of the two-part mixture to make it equal in cost to the three, but simply dropped out one element.

Field work has confirmed the results of these more careful plot experiments. For the last two years I have used only acid phosphate and muriate of potash on my main acreage, and with as good results as from complete fertilizers.

If a two-part fertilizer will give just as good results as a complete fertilizer, might not one element give as good results as two? My clover sod responds to this question as follows, the figures given being the average of three years experiments:

ONE-PART FERTILIZERS.

Phosphoric acid	149	bushels per acre.
Nitrogen	127	"
Potash	134	"
No fertilizer	116	"

All three show gains of some account, the phosphoric acid much the best. Taking into consideration the cost of the fertilizer, phosphoric acid made the greatest percentage of profit of any and all mixtures. However, the addition of potash materially increases the sum total of profit, if it does not quite maintain the high percentage of the former when used alone. On my soil, and with my rotation, phosphoric acid and potash, in the forms of acid phosphate and muriate of potash seem to be the most profitable commercial fertilizer that I can use.

Experiments of one year's duration seem to indicate that the amount of potash might be diminished slightly and the phosphoric acid increased without affecting the yield, and with some little saving per acre in the cost of fertilizer.

VALUE RECEIVED.

One who buys fertilizer these days and uses it in growing low priced crops wants to be sure that the increase in the crop will pay for the fertilizer used. The day for guess work has passed.

The actual return in potatoes for the money invested in fertilizers in the above experiments is as follows:

$3.00 worth of nitrogen alone gave	11	bushels potatoes.
3.50 worth of potash alone gave	18	"
2.75 worth of phos. acid alone gave	33	"
5.75 worth of phos. acid and nitrogen gave	34	"
6.50 worth of nitrogen and potash gave	24	"
6.25 worth of phos. acid and potash gave	59	"
9.25 worth of complete fertilizer gave	60	"
Best returns from $1	12	"

The figures above are the cost approximately of the three ingredients whether used alone or in the various combinations. That is, where I used nitrogen at all in my plot experiments, I used $3 worth per acre. This is true of all the plots except the tankage plots. While it is apparent that at the present price of potatoes there is profit in all the various applications, the range of profit varies from a little over three and a half bushels to twelve bushels per dollar of investment. It is further apparent that nitrogen added little or nothing to the productiveness of the other combinations, and that phosphoric acid is very essential.

LINES OF PRACTICAL ECONOMY.

By M. C. Morris, Shandon, O.

In these days of hard times, times of intense and close competition, when every man's hand *seems* to be against that of every other man; when every teacher and preacher, every business man and public man—in short when everybody is crying "*economy*," it behooves us to stop and calmly consider whether this is the old cry, "*Wolf! Wolf!*" or is there a real need of crying "*Economy! Economy!*"

The farmer realizes the necessity for practicing economy from the fact that for some years crops have failed, prices have fallen, his resources have grown less and less, and he must do something to sustain himself. In some cases this means that he must hedge carefully, while in others it may mean that he must practice that rigid economy taught him in his earlier years; in any case it means that it is incumbent on every farmer to carefully consider his *own* case, and not that of his neighbor, for economy, like charity, to be effectual, must begin at home.

He should frugally manage his money matters and prudently manage his time, labor and implements.

The active years of a farmer's life are few and he should improve every fleeting moment. This does not mean that he must work and slave day in and day out, but it does mean that he must make hay while the sun shines, and when the sun does not shine he must put in his time at something just as profitable, studying some of the problems that present themselves for his solution *anew every day*. Even this does not mean that he is not to take recreation; some one has said, "All work and no play makes Jack a dull boy." I believe the farmer should have his seasons of relaxation and that he should enter into the enjoyment of them with as much vim and vigor as he puts into his work.

The average farmer is too prodigal of time. When I consider the way the farmers of many localities gather into the villages, in the evenings and on rainy days, spending the time in worse than idleness, telling vulgar tales and discussing free coinage—and who struck Billy Patterson. I say when I think of this awful waste of time, and what great good could be accomplished in their lives, that I do not hesitate to say that one of the lines of practical economy that the farmer should practice is a *better use of his time, a full use of his time.*

"No man is born into the world whose work
Is not born with him; there is always work,
And tools to work withal, for those who will:
And blessed are the horny hands of toil!
The busy world shoves angrily aside
The man who stands with arms akimbo set
Until occasion tells him what to do;
And he who waits to have his task marked out
Shall die and leave his errand unfulfilled."

Next to a better use of his own time the farmer should study a better management of the time of those in his employ. This does not mean to pile up three or four days work and expect the hired man to do it all in one day, but it does mean that he should so manage the work that the greatest amount will be accomplished in the shortest time with the least friction; that the work shall be placed before the worker in even stages and that he shall not be constantly changing work, or teams, or tools; and that the farmer himself shall have thought out and planned the matter beforehand so as not to appear vacillating and uncertain as to what would better be done, but to know definitely and follow the plan. This gives the man confidence in his employer's judgment, and he goes on to do better work in the assurance that this is the right way. Now I speak advisedly, I know there are seasons of the year and conditions of weather that almost preclude the possibility of following out plans to the letter. But for these adverse conditions, which come in every farmer's life every year, they are not the exception, they are the rule, so we may as well prepare for them by having plenty of work constantly on hand under shelter, which can be taken up at a moment's notice, or dropped as suddenly for something more important. The woodshed and workshop are two great sources of economy from this standpoint. Have the men prepare the stove wood under shelter in rainy weather, and do not allow them to feel that you are doing this to keep them out of mischief, but that it is a part of the farm work that must be done today so we can do something else tomorrow. How many farmers have their wood piles outdoors where the men can only work at them in good weather; who only keep on hand about two arm loads of green, sappy, water logged stuff for the good wife to cook and bake with, and then wonder why she does not seem so amiable as before they were married; and who have to stop about every other day, when important work is pressing hard on every side, to split a little wood that the meals may be forthcoming.

Another line of practical economy is the workshop; every farmer should have a work bench and set of tools. This does not mean that he must be a mechanic in every sense of that term, but it does mean that in bad weather he and the men can make singletrees, doubletrees, jockey-sticks, coupling poles, and mend the broken places and make a good many new and handy things a great deal cheaper than they can be bought. And if he will keep on hand an assortment of bolts, clips, hooks, etc., things that he can buy as cheaply as anybody, and a great deal cheaper than he can get them made, he will be able to do a large amount of repairing through the year, as breakage occurs that will amount to a great saving in cash outlay, and on farms where many tools and teams are in use, no aid to economy is more important than a workshop. The matter of skill does not enter largely into this work; of course everything should be made as neat as possible, but originality is not required, for almost any man with a pattern can make such things as I have named. This line of economy is the more important because unskilled labor can thus be utilized to make articles that are just as useful and durable as if made by skilled labor. I always keep on hand seasoned oak and hickory from which to make such things as

I need in these lines. Now, some person may think I am depriving the trades of a livelihood. Let me say to such persons that our times and conditions are constantly changing, and I do not deny that the tendency of the times to manufacture every little thing under combinations and trusts, crowds smaller workmen out of competition and compels them to readjust themselves to other conditions. These changing conditions also affect the farmer, and if we do not feel able to buy every article used on the farm we must be allowed to make it ourselves. This is only in part going back to first principles and carrying out the principle of selfpreservation.

Another line of practical economy is the matter of buying by wholesale. I am willing to admit that in some cases the middleman may be a convenience, but as a general thing in trade he is a parasite, and not of any financial benefit to the farmer. I am sure that the profits he gets from the farmer would more than reimburse him for the loss of the middleman if the latter were to go ont of business. We may not be able to properly adjust all these things, but in buying let us get back as close to the producer as possible, buy in quantities that will give us an advantage in the markets, and above everything let us be informed as to price.

Again, it is possible for the farmer to economize in the matter of implements. Three of my neighbors and myself own a first class fanning mill. The amount saved over buying four mills is more than sixty dollars; the one mill does all our work and then stands idle more than three-fourths of the time. The same men now contemplate buying a heavy land roller, and the amount saved over buying four rollers will probably be more than seventy-five dollars and then the one roller will be idle three-fourths of the time. The same can be said of disc harrows and other high priced tools. It does seem to me that it would not take a very profound mind to see the practical economy in these things. I do not advocate a general, indiscriminate partnership in everything. I know that the commoner implements of general use every farmer must have for himself, and I do not believe in borrowing much. A little does no harm, but it is not a difficult thing to ride a free horse to death; but for all the high priced, exclusive tools this line of economy is entirely practical. The only thing it requires is a little more neighborliness, more forbearance, a more generous distribution of the milk of human kindness. Every other industry and avocation has its associations and organizations, and if three or four manufacturers can organize to keep down expenses and protect themselves against opposition, why, in the name of everything that is good, cannot three or four farmers organize on a mill, or harrow, or whatnot, and against the agents and sharks that are sapping their life blood. There is no reason, I think, except, perhaps, the insufficient ones, first, that the farmer does not think of it, and, second, that he does not like a part ownership in any piece of property. These feelings, however, might be overcome.

I have endeavored to touch a few of the out-of-the-way methods of economy, and if I have succeeded in getting you to think and act along any of these lines I will feel that something has been accomplished.

ABOUT THE FARMER'S HOME.

By J. E. Wing, Mechanicsburg, O.

I do not want anyone to think of the question of the farmer's home as one of the *least important* subjects to be discussed at this Institute, or as a subject of no *practical* importance. Why, this is the subject of *crowning* importance. The home is what the farmer exists to create, and the farm is for ministering to the home. The home does not exist for the farm, as some seem to think.

There are several interpretations of the word "home." To some, I am sorry to say, it means the place where one eats and sleeps and has his washing done. To another it is the place where he gratifies his vanity in making a show, in building a costlier house than his neighbor; in filling it with showier and more expensive furniture than his neighbors can afford, in the giving of elaborate "receptions" and "functions" the like of which he knows can not be imitated. This may be a home, but it is, at least, questionable.

To me, "home" means the little house on Woodland farm, which I built largely with my own hands; it means the trees that cast their grateful shadows across the grass on summer days and stay the cruel winds of winter; it means the vines that I have planted which cling to the unpretentious walls as though they loved them as I love them; it means the broad window which the warm glow of the open fire streams through to cheer the passer-by on winter evenings; it means the wide, deep, old-fashioned fireplace and generous fire of wood, cut from our own woodland; it means the shout of little voices, the patter of little feet, the clinging of little arms, the sweet innocence of baby lives; it means, and this most of all, the companionship of the woman who walks with me; it means the walls on which she has hung pictures, the bookshelves that she has arranged, the old treasures she has collected; and, of course, it means the dining room with its long table and the feasts that are spread there by her hands some ten hundred times each year. Most of us love to eat. It has been wisely arranged that way in order to give the farmer something to do.

Now, what about the farmer's home? What have I to say about it? Will you pardon me if I scold a little, if I find fault because some of us fall short of having such homes as we may have if we wish?

I have traveled far over this land of ours, have lived in farmer's homes in many states, from the Gulf to the far North, and west of the Rocky Mountains, yet nowhere have I seen better homes than in Ohio, nowhere have I seen more beautiful, more homelike homes. Yet we are lacking in not having the beauty that we might have about our homes. The fact is that our homes are more delightful inside than out; our wives know pretty well how to make a home charming inside; there is but one thing left for them to learn and if I do not forget, I will tell them after awhile what that one thing is.

We do not like to learn from foreigners, we prefer teaching them, yet we can learn from the English. I have a neighbor who is a frail old English lady and one would think that she had hardly strength enough to do her housework, yet she is out in her tiny lawn many hours a day working. I do not know but she finds strength out there which enables her to do her housework; I am about ready to believe that she does. At any event her yard is always pretty, her roses are neatly trimmed and always bloom, her vines cover the unsightly places, her bits of grass are neatly trimmed, her gates and fences are in repair and while her cottage is very small and modest, yet it is one of the prettiest places in our village. It is such a place that when a stranger sees it he naturally says, "Why, what a pretty home! It must be that the people who live there are of gentle blood and they must love their home very much to keep it like this."

Now, not a half mile farther along the road stands a great brick mansion. It is on a little hill and there is not a tree, shrub or vine about it, it is magnificent to look upon, there is every evidence of its having cost a great deal of money, yet no stranger ever thinks of it as a home, in truth I am often asked if it is not some sort of a public institution. It cost enough to build it to put a large mortgage on one of the best farms in our country, yet it is a failure, judging it as a home; it is not so much a home to look upon as the tiny cottage that cost one-tenth as much.

The first fault that I wish to find is that we do not give room enough about our homes. Land seems to be plentiful enough as you ride about the country, yet some farmers begrudge a little of it to the home dooryard or lawn. Why, land thrown into the dooryard need not be considered waste land, at all. We have perhaps a quarter of an acre in grass at Woodland Farm lawn, and we take the big horse mower and mow it all down twice a year, rake up the hay and put it in for the horse, and the horse grazes on it sometimes; but even if it were simply allowed to grow there to look at and for the children to play on, it would by no means be wasted. Just figure it out, if you please, we like to be so practical as to reduce things to figures, although God knows that there are some of the commonest things that are valuable beyond price. Suppose a half acre is devoted to the dooryard, an acre would be better but I will now plead for only the half of it. Land is worth, say, on the average, forty dollars an acre; the half acre, then, is twenty dollars invested in home surroundings! Not the cost of a useless cupola on the barn roof, yet how much more common are the cupolas than the half-acre lawns.

But I will be bolder than this. I want you to include a whole acre in the home grounds, then you will have room for trees and shrubs besides grass. You see I do not want you to plant trees very near to the house. There are several good reasons why you should not, one is that the shade is bad for the people who live there, the sun ought not to be cut off more than is necessary, it is life in more senses than one; sunlight has the power to destroy all forms of hurtful microbes, such as cause fevers and consumption. I have seen old homes buried beneath trees that were planted long ago and the houses and all near them seemed always damp and it is true that people living in such places are very often sick, perhaps never suspecting the cause. Another excellent reason is that storms of wind are very common and trees *always blow down* sooner or later, unless we cut them down. It is a safe rule not to plant a large-growing tree nearer than eighty or one hundred feet from the house. And in planting *any* tree we must consider what it will be like when it has grown up, we do not like to destroy trees when once they have grown about our homes and their roots have taken hold of our lives as well as of the soil.

A lawn mower is a very good thing, and a well kept lawn is a thing of beauty, but I will not say that it is very practical for the farmer's home grounds. We use one, it is true, but only near the house, on about one-tenth of the grass plot. It takes muscle to push a lawn mower, and muscle is a thing in great demand in the hay field and corn field from May to August, when the lawn most needs mowing, therefore, unless one has boys or girls who can use it he would better plan to mow his lawn with horse power. This brings us to the arrangement of the lawn. If it is to be mown with the horse mower it must not be "cluttered up with a lot of brush," as a sensible old farmer once expressed it. It must be *all clear grass* and the trees by themselves, and the shrubs beneath them, or massed together at the side of the grass plot. It is very fortunate that this is also the best arrangement, looked at from the artistic standpoint. Let me make this suggestion: put the greater part of the home grounds to the north and west of the house. Then on those sides, or one of them, there may be a number of trees, quite a little forest of them, some evergreen, such as cedar, pine and spruce, but intermixed with maple, aspen, oak and beach, and whatever grows well in your soil and is beautiful to your eyes. Plant the taller ones farthest back, and shorter ones in front of them and yet shorter ones in front again, such as redbud, dogwood, wild crab and the like, and at the edge of all plant shrubs. Then when the icy winds comes whistling across the fields telling us to stay away from the Klondike we will receive a great deal of benefit from these trees and shrubs, they will save firewood in breaking off the wind and one by one they will some day themselves make wood for our children's fires, if not for our own.

Did you ever walk through a forest or bit of wild woodland and, breaking through the brush and wild roses, come suddenly to a little opening, carpeted with grass, sunny and bright, sheltered too from wind and storm? If you ever did, I know as well as though I had been with you that your first thought was, "how pleasant, what a place for a house this would be !" That is my ideal of what a home setting ought to be, a sunny bit of smooth grass; around it, especially on the more exposed sides, great trees, beneath the trees all manner of shrubs and wild, blooming things. Can you not see the picture? Does it not seem practical? Is it not within reach of the farmer, something that he can do himself, that will cost him only the time and muscle to do the planting?

A word here as to what to plant. Go to your own wild woodlands, not to nursery catalogues for hints. The trees will tell you what to plant. In every country that I have ever seen there has been a charm and fitness about the native trees and shrubs, they have been more beautiful and far more appropriate for local planting than trees from foreign lands. Of course there are some trees that grow so quickly, such as the box elder and the poplars and aspens and ailanthus that it may be well to use a limited number, and they may not grow in your own woodlands. This is not quite so true of shrubs, although it is very nearly; the sweetbrier is almost naturalized everywhere, although it is an immigrant from English hedgerows, the wild spireas are as beautiful as the cultivated ones, the elderberry is without rival. The lilac comes in here; it makes one think of spring and sweet odors and rejoicing robins just to mention the lilac, of which there are several varieties.

All these shrubs are nuisances if planted in the grass plot, they are in their place in the border in front of the trees. Then, among the shrubs, there is room for all the old-fashioned perennial flowers. The tiger lilies. the pure white ones, the asters, wild and cultivated, the perennial peas, and all the dear old favorites that carry with them memories of childhood and of dear ones who are no more.

Back of the farmer's home there naturally should come the orchard. We are neglecting orchards of late years. That is because we must discard the old sorts that once did well but will do so no longer, and have not yet believed that there are newer varieties that will fitly take their places. We must wake up to this point; a farmer's home without a barrel of apples open in the cellar is but a sorry apology for a farmer's home. There are some fruit trees so beautiful in bloom and leaf as to be worthy of a place in the lawn. Whatever may be said of the Kieffer pear it is a beautiful tree in bloom or leaf, and especially when it has taken on the warm reddish tints of autumn.

Some of my friends say that I am a crank about house building. It may be true. You know that a crank is something to which power is applied at one side, and that makes things go round. Apply the power at the center and it is not a crank, but neither will it go. The trouble with some people, who pride themselves in being well balanced, is that they do not go!

Well, what gives me the reputation of being cranky about house building is that I think a country house should *be* a country house. It should not be a city house built by mistake in the fields; it should *fit the fields*, and look as though it had grown there; it should have an air of individuality of its own, not like Mr. So and So's house, but like itself; it should fit the needs of the people who live in it, and it should look like a part of the landscape. Why, we Americans pride ourselves on our independence, yet we are the least independent of any people on the globe when it comes to house building.

Set an Englishman or a Scotchman or a Swiss at it in his native land and he does not send for the carpenter and ask him what sort of a house he would better build; he does not consult his rich neighbor to see what his house is like. No, he builds simply, with no pretense, making roofs only to cover his walls, walls only to enclose his rooms, rooms only for sheltering his people, and possibly a cow or two, cuts windows where he thinks light or outlook is most needed, and when it is done we go four thousand miles to see it and call it beautiful, and go back again and again. That is, some of us do. The Ohio farmer has not travelled abroad much for several years.

I have heard many people of education and culture say that what charmed and pleased most and longest in Europe was the country, the hedges, the cottages, the homes of the common people, with their vines and picturesque walls and gables. Now what is the use of their being driven across seas to spend their millions every year among foreigners? Why can we not make our own country homes as beautiful and as picturesque as the foreigners can theirs? Perhaps we need, first, a revision of taste; we need to quit aping city styles and ways of building. Perhaps we must learn to know a beautiful thing when we see it. There are thousands of old houses now being deserted in Ohio that are more artistic and beautiful than the modern palaces of gingerbread that are being built in their places. It pains me to see people discard a good old house just because it is old. That ought to be a point in its favor, if in other ways it is all right. I love to see an old home, one that has been long lived in by the same people, and that has been cared for as it deserved. I remember one, in particular, that is worth a trip across the state to see. It is a plain, old-fashioned brick house, painted dark red. The windows have been made modern by replacing the small panes with large ones. The grounds are ideal, a wide sweep of grass and trees back of all. Over the house, completely hiding the north gable, grows the true English ivy; it is green winter and summer; on the other sides grow the American ivy, or Virginia creeper. In the borders there are many flowering shrubs and roses. Among them at any time on summer afternoons you may see a silvery haired old lady, with her gardening tools, pruning, digging, planting. There is not a more delightful country place anywhere than this, and I love to go there and talk with these old people, to walk among the flowers and the fruit trees and see the bee hives. They are happy. They have some of their grand-children with them often, and I am told it is hard to persuade the children to go home after a visit at the farm. True, it is a good brick house, but all the charm and beauty of the place is given it by things that cost no money at all, simply loving care.

Now, a word as to vines on the house. There is a popular idea that they make a house damp; that is a mistake, they really make the walls dry; the leaves keep rain from reaching the walls; with the English ivy the leaves overlap like fish scales. There is nothing that so beautifies a home as to clothe it in vines.

I wish that I had time to tell you all that I think about building the farmer's home. I fear that you will get but a confused idea of it unless you have already thought along the same lines yourself. I have said that we leave too much to the country carpenter in planning our homes; that if we can afford it, we imitate city houses. Perhaps the root of the difficulty lies in the materials with which we build. When houses were built of logs and covered with split oak shingles and daubed with clay, and the chimneys were outside, and the roofs were made wide to protect all, there was no difficulty in our building beautiful and artistic houses. You must not laugh at this; the log house, built of round logs with the bark on, with its huge chimney and low, broad roof, is far more artistic, and more a thing of beauty, too, than many of the modern houses, and when artists go to the country to make pictures, you will not find them putting many modern houses in them — it is the old ones that they want every time.

Now, what is the reason of this? There must be a reason for it; things don't "just happen" in this world. Why is it that there is a homelike appearance to one house and to another no expression at all, except that of being a sort of Chinese curiosity, a bewilderment of meaningless adornment and useless gables? Yes, there is good reason for it all. Let me call to your attention some of the things that the house should suggest and that it does suggest when it pleases us. What I wish to impress upon you is the fact that we inherit likes or dislikes for certain things, and when we see them they please or displease us without our always knowing why. There are certain forms that look right and are pleasing to us. Perhaps we can analyze these forms, and after finding the reasons why they please, we will be able to build our own houses so that they will please.

Once men lived in tents. For thousands of years, the tent made of skins, of bark, or of rude, coarse cloth, made their shelter. The first houses were tents with low walls beneath them to give head room. The wide, sloping tent roof became associated in the human mind with shelter, with warmth, with home. So, today, when one sees a house with a rather low, but broad and sheltering roof, not cut into all sorts of fantastic shapes by some whimsical carpenter, trying his skill at joinery, it gives him a feeling of pleasure, to him the building has a "homelike air."

The next step in civilization, after the tent had been put on low walls, was to build the chimney. It was of stone and very large, in it great fires roared and about it sat all the family, watching the roasting meat as it slowly turned on the spit. Today, as then, a generous chimney suggests cheer, it suggests hospitality, warmth, comfort. Don't ruin your house by building a little, stingy looking chimney, suggesting air-tight stoves, and sixteen-inch split wood, or that abomination on the farm—soft coal. I call to mind a very pleasing house that was ruined in appearance, made positively ridiculous, by a tiny chimney peering out of a generous expanse of roof.

Yet another step in the art of home building was the introduction of windows. What a great step that was! At first, they had to be small and narrow, mere slits in the stone walls, easy to defend in those troublous times, but later they grew broad, with wide ledges in which flowers bloomed and wives and children sat in the winter sunlight. These three things—the broad, sheltering roof, the generous chimney, telling of warmth and cheer and wide open fires, the broad windows through which streams the light and cheer that is within, as the weary master comes home after the labors of the day, or through which laughing children look out at him, as he goes to work, and wave their little hands and shout—these make the home beautiful, be the materials ever so common and cheap, or the walls ever so humble in their upreaching.

A word here about the height of the farmhouse. Why build a great, high building in the country? It will not look well unless the surroundings are just right, and it is nearly impossible to give it the effect of which we have been talking; true, it may have a certain magnificence, but that is a quality that repels as much as it attracts, and seldom repays the cost. Land is cheap these days, better spread your home out over more of it rather than pile it up room above room. Stairs are evil things at best. The country housewife should get her exercise in other ways than in climbing them much. True, a house ought to have rooms over the living rooms, both for economy of space and added coolness in summer, but I would live as much as I could on the ground floor.

Perhaps some one may ask, "Do you think that the farmer should plan and build entirely after his own ideas?" Well, no, I think in the long run he would do better that way than he is doing now, but that is no longer necessary. There are trained architects—a few—who are devoting their talents to solving these very problems that we have been considering. If you will submit to one of them your floor plan and tell him frankly how much you have to spend and where your house is to be built, and ask him to draw for you the picture of how the house will look when it is finished, telling him your ideas of having it true in expression to its real purpose, so that it will look like what it is to be, a country home, he will do this for you at a very small cost. I think about five dollars or ten dollars will get you the sketch, and if you go to the right man, and he understands you, you will find that he will put your somewhat vague ideas into form better than you can possibly do it yourself. But you must caution him against trying to make it appear what it is not, or trying to make it showy or pretentious in any way.

Now, what difference does all this make? I suppose some of you are asking. It makes this difference. We live by partaking of food. That is what we are farming for, because people must be fed with things suitable to nourish the body. Well, the soul lives, and grows by using food, too, and the eye is the mouth through which the soul is fed. Beauty *does count*, beauty *does pay*. Why, it pays even in dollars and cents, but it pays more in the pleasure that it gives us all as we live from day to day. I wonder if you ever thought of the truth that to be surrounded by beautiful things and to have the appreciation of them is a source of health to the body.? It is as true as can be. To the healthy soul a beautiful object causes a feeling of delight, of pleasure, and that feeling acts on the heart, on the digestion, on the liver, and quickens the flow of the blood. That is why I want you to build your houses to be beautiful. And that is why I want them to have beautiful settings amid trees and shrubs and grass and vines. And just as practical as any of it, or more practical, this is why I want our wives and daughters to live out of doors more and to grow roses in their cheeks as well as in their borders.

But what of the inside of the farmhouse, is it not worth considering too? It is. I have said that I thought that our women knew better how to make a home what it should be inside our house than we know how to make it seem homelike on the outside.

There is one thing that we ought to have and that we sometimes neglect, the open fire. A home with no sitting room with open fire is not nearly the pleasant home that it should be. There is no costly luxury that can be introduced into the farmer's home that will bring with it the pleasure and lasting comfort that the open fire will bring. It ought to be a good sized fireplace, where logs of wood can be burned, but even a grate is better far than no open fire at all. It is more than a comfort and a luxury, it saves doctor's bills by the score and lengthens life and makes it pleasant. There is nothing so grateful to the sick person as to lie and watch the fire, no pleasure so much enjoyed by the old as to sit and dream as the sturdy sticks turn into glory and the ruddy coals into clean ashes again. I do not see how a family of babies can be raised successfully without an open fire; I shall not attempt it, I am sure.

One other thing I must mention, the bath room. It need not be a large room, it should be over the kitchen or near it so that hot water would always be at hand, and it should have a large bath tub. This bath room need not cost much and I venture to say that any man who has once had it in his house will not do without it again for several times the cost.

Another thing on which I should insist is light. Let the sun into the house. Make the windows wide and do not shut out the blessed sunlight for fear it may injure the carpets. Better faded carpets with roses on the babies' cheeks and on the wife's, than roses on the carpet and white faces on the wife and children.

I said some time ago that there was one thing left for our women to learn. I will tell them what that is. I do not expect a very cordial acceptance of the truth, but I hope that the *thought* will *stick* and that after a time it may be *believed* and may have good results. I have said that our wives and daughters know how to make a home charming *inside*, there is only one thing that they forget, it is that the chief charm of the *home* is the *woman* who *makes* the home, that it is of greater importance that *roses bloom* in *her* cheeks than that the *floors* be swept scrupulously clean over the whole house every day, that the *meals* be each one a *feast*, that every speck of *dust* shall be wiped from the *glassware*. To put it plainly, men do not care for *immaculate houeskeeping* as they would if it did not so often mean tired wives, growing old and worried and sometimes tearful when they should be in their prime. Our wives and our girls ought to be more out of doors. That is the long and the short of it. *They need* the *out doors* and the *out doors needs them.* I believe in woman's rights, at least this far, her right to get plenty of good vigorous out door exercise, even if we have to surrender the care of the lawn to her, or the use of the horse rake. But *work*, work that must be done, is not, perhaps the thing to call the women out. Just what *is* will be different in each case, perhaps. English women ride and walk and play tennis and golf after the age when our women affect neuralgia and face powder. True "there is no creature on this green earth equal to an American woman," as a cowboy friend once assured me, but I would have it so that neither this earth nor any other earth held such a charming being.

There is a good deal about women in this, but I would like to know how you are to talk about the farmer's home and not talk about the women? There is no *home* unless *the* woman is in it. Mind I do not say *a* woman in it, I say *the* woman. I lived for several years where we had no women. We had a house, several of them, but never did we think of these places as "home." We would say, "let us go to the house" or, "let us go to camp," never, "let us go home." Even when we hired a woman to take care of our house we did not speak of it as home. But when I had lived there four years I asked *the* woman if she would not come and live with me, be the partner of my joys and sorrows. She said, oddly enough as it has always seemed to me, that she would. Then I began to cut logs and notch them and lay up the walls of a new and better house. I mixed the mud and made adobes for one room of the house. And as I worked, almost before I had the foundation covered, it seemed like home to me. It was the sweet and inspiring, although intangible spirit of *the woman* that already inhabited the rude house and made it *seem like home* to me.

So, after all, the farmers's home begins with a woman and ends with a woman! May God bless her.

GROWING POTATOES.

By Mr. C. G. Housekeeper, Bowling Green, O.

Having had twenty years' experience in raising potatoes, our method now is as follows:

We prefer a clover sod. Our soil is a black sand with a poor quicksand subsoil. We apply yard manure in the fall or winter, if we can, but in the spring, if we cannot sooner, spreading it from the wagon as we haul it. We have tried commercial fertilizers several times but they did not pay on our soil.

It pays to go over the field both ways with a disc, or spading harrow, before plowing. We plow seven or eight inches deep, using a wheel on the plow. Just before planting we go over it, first, with the acme, and then with a steel smoothing harrow, making the land fine and level.

We plant, with an Aspinwall planter, and use early Ohio for early use and Carman No 1 for the main crop. As we have a home market for all we grow, we want shape and quality, more than quantity. We aim to meet the demands of our customers as near as we are able. We soak our seed in corrosive sublimate, using one ounce to fifteen gallons of water, for from one to two hours. We use for this purpose a tank and a coal oil barrel. We make the solution in a wooden tank that will hold fifty or more gallons. Then we set the barrel on the edge of the tank, fill it with potatoes and pour over them water out of the tank; when soaked long enough we draw the water off through a hole near the bottom of the barrel into the tank, lay some boards on the ground, by the side of the barrel, and empty the potatoes on them to dry. We cut a medium sized potato into four or five pieces. Have tried one and two eyes to a piece but get better results from more seed. Have grown good crops from whole potatoes the size of a walnut.

The seed should be planted soon after being cut and should be grown from selected tubers, planted a little later than the others, or so as to ripen just before frost in the fall, as then they will keep better through the winter.

We do not like to plant till the ground is warm, so that the potatoes will come up and grow strong and vigorous. We plant the early Ohio in rows two and one-half feet apart, and thirteen inches in the row. Later varieties three feet apart and seventeen inches in the row. The planter leaves a small ridge over the row, and about a week after planting we go through between the rows with a five-tooth cultivator and stir the middles a little deeper than the potatoes are planted. All after cultivation is shallow.

In a few days we go over the field with a harrow and level it nicely. If it rains before the potatoes come up we go over it again with the weeder or harrow. As soon as they are up so we can see the rows we go through them with a Planet Junior, nine-tooth cultivator and follow with the hoe, cleaning them and stirring all the surface. We like to cultivate them at least once a week until the tops interfere; sometimes we use a single shovel for the last cultivation, making a light hollow between the rows, as it makes it better for digging. We wait till the tops are dry, as we believe that it injures them to disturb them when wet.

We have had but little rot or blight. We use Paris green for the beetles, putting it on dry with a bellows duster.

We dig with a Hoover and Prout digger. We have a good supply of bushel boxes, made of basswood, fourteen by fourteen inch ends, made out of three-fourth inch boards, and sides and bottom seventeen and one-half inches long, out of one-half inch boards. We place the boxes along the side of the field, three or four in a place, one or two rods apart. Each hand has two tin pails, and puts the large potatoes in one of them and the rough and small ones in the other. We find it easier and cheaper to sort them in this way as we pick them up in the field. We do not haul them in the boxes, but empty them into the wagon box, as this shakes off the dirt, and in scooping them out, the dirt is left in the wagon; besides it racks the bushel boxes to haul them. The most of our crop we haul from the field to market, doing as little handling as possible.

When potatoes are low in price, we feed the culls, boiled, to hogs; if they are high, we sort out the best of the culls and sell for half price and feed the remainder.

We have not been able to raise any such crops as some others tell about. We grow from twelve to fifteen acres each year, and we consider one hundred and fifty bushels of marketable potatoes a good crop, although we have grown two hundred and fifty bushels to the acre in a good year. We do not like to raise potatoes on the same fields oftener than once in four years.

We can keep our seed best by burying it, using plenty of straw; the first sprout is the best and the seed should be kept where it will not sprout till planting time.

OUR COUNTY FAIRS.

By A. L. White, Norwich, Ohio.

This subject may not seem important at first thought, but when we consider the amount of time and money spent in conducting our county fairs, and that it is generally admitted that, when properly managed, these fairs are bound to improve the methods of farming and to lift the standard of intelligence among farmers, we can but feel that the topic is worthy our attention.

The wise farmer of today is ever on the outlook for sources of information that will give him knowledge necessary to insure success in his occupation.

Fifty years since, when our soils were new, our demands few and financial conditions different from what they now are, the farmer with a little knowledge could be successful; but today with our worn soils, increasing demands and changed conditions of finance, the wise farmer hails with joy the many opportunities of securing information that are presented to him. He is a friend to the agricultural department of his state, and the publications of the department, together with the bulletins from the experiment farms are heartily welcomed by him. Choice agricultural papers find their way to his home. He also takes pleasure in attending the farmers' institutes and in doing all he can to make them interesting and profitable.

The prosperous farmer looks upon the county fair, not as a source of entertainment alone, but as a way by which he can obtain social, intellectual and financial benefits..

In talking upon the subject we will not try to describe the ideal county fair, but will attempt to give a plain description of the way the wide-awake farmer views the fair and the part he plays relative to it. He has proper respect for the state and district fairs, but he feels that the county fair belongs to him and his neighbors since it is within their reach and its success depends upon their efforts. He considers that the county that holds a successful fair is usually occupied by a prosperous and happy people. He therefore does all in his power to make the fair a success. If he is one of the managers he knows that he must donate some of his time, and is present at all meetings of the board. He is full of enterprise and encourages each movement that promises to bring upon the fair ground that which will please and instruct those who attend. He, however, carefully discriminates, and all low games of chance and fake shows are excluded from the fair. He realizes the fact that while some things may seem to draw the crowd, they would at the same time carry away hundreds of dollars of his neighbors' money, leaving nothing in return.

The board may be in debt and the rum power will likely offer a handsome sum for the privilege of a stand upon the ground, but he knows that the saloon is an enemy to prosperous agriculture, and is also responsible for a large percentage of the high taxes that he has to pay. He has observed something of the nature of the temptations that the saloon presents in the city, and will not allow such influences to be presented to his friends upon the fair ground, beneath the broad gleam of the noonday sun.

He believes in thoroughly advertising the fair, so in due time attractive bills appear in conspicuous places. He also calls upon many of the farmers, urging them to attend, at the same time soliciting entries for the various departments.

The wide-awake farmer will place complimentary tickets in worthy hands, but is careful not to flood the gates with such tickets, for his knowledge of neighboring fairs has taught him that some associations have been sorely crippled financially from this cause.

In choosing judges for the different departments, he not only selects those who have a superior knowledge of what they are to judge, but who will, without doubt, decide according to the relative merits of the exhibits.

In due season he will give positive encouragement to those whose horses give exhibitions of speed upon the race track, but will not bestow undue attention to this department to the neglect of other important ones.

Wherever you find him during the fair he carries with him a wholesome atmosphere, and treats exhibitors and visitors in such a gentlemanly way that they will be glad they have come, and will resolve to come again another year. Should the wide-wake farmer be an exhibitor, he has studied the fair catalogue and is able to make his entries in a judicious way, he makes his entries early and presents his exhibits at the proper time and place, in good shape. He is courteous to the superintendent of his department, and also exercises the same spirit towards his competitors. He makes no effort to win undue favor from the judges, but responds to their requests, and to those of visitors, in a free, honest way.

If the wide-awake farmer is simply a visitor at the fair, he has arranged his work so that he may spend some time upon the fair ground. If he lives in a remote part of the county, he may not be able to spend more than one day, but he comes early bringing his family with him, and as they visit the various departments they allow nothing of interest or value to escape their notice. They are not like the young man who upon returning from the Columbian Exposition was asked if he had seen the Ferris Wheel, and replied, that he "had not run against her nowhere." The exhibits are all viewed in a systematic way, and whatever is of special interest, or promises to be of future value, is carefully noted. When the noon hour arrives, he, with his neighbors, sits down to a bountiful dinner spread beneath the shade of the great trees. After dinner, much time is given to social improvement, cultivating old friendships and forming new ones. Then more time is spent in sight-seeing, until the lenghtening shadows announce to all the swift departure of the day, and with many good wishes they pass out and go cheerily homeward.

When the fair is over, the wide awake farmer, in summing up results declares that he has been well paid for his attendance. The improvement which he has made will be of very great value to him as he pursues life's journey. He has made an increase in his intellectual store to such an extent that his work will be made more pleasant, and will insure greater financial results.

Now since the county fair has come to stay, let us all, as honest, true hearted yeoman, unite our efforts in making our county fair the best one in the grand old state of Ohio.

WHEAT RAISING.

By S. K. McLaughlin, Hurford, O.

The rapid advance in the price of this most important of cereals from forty-seven cents in 1896 to the dollar mark in 1898, gives this subject increased interest to the farmer of Ohio at this time. The very low price of wheat for a few years prior to 1896 was believed by many to be the result of over production; but the truth is that the United States produced less wheat per capita from 1885 to 1890 than from 1880 to 1885, and the same decrease is true of the period from 1885 to 1890 as compared to the period from 1890 to 1895. Within the past twenty years the great wheat fields of the Northwest and West have been subdued and have passed their maximum point in the production of wheat.

Our improved harvesting machines have been introduced into nearly every wheat growing country in the world. It is very apparent that competition in this branch of agriculture will not be nearly as sharp in the future as it has been in the past. As the production of this world's staple article of food has not, in the past twenty years, kept pace with the increase of population, what will the future be?

The consumption of wheat bread increases with the advance of civilization. As civilization increases, so must the consumption of wheat.

Another advantage the wheat producer has, he is not compelled to place his production on the market as soon as harvested. It can be safely stored for a number of years. The market gardener must get rid of his produce in a day. The horticulturist can have but a few months at farthest. "As good as old wheat in the mill" is a trite old saying that expresses forcibly the value of this product. A further inducement is that all authorities agree that wheat bran is one of the best feeds for all kinds of farm stock, especially young and growing stock.

To raise wheat at a reduced cost, three things are most important:

1st. A thoroughly pulverized and firmly compacted, moist seed bed.

2d. Sufficient fertility to insure necessary plant food.

3d. Shallow seeding.

To secure seed bed plow as early as possible after harvest, or before, if the field is not in grain. Harrow and drag or roll the same day that field is plowed. This prevents the evaporation of moisture. Then harrow and drag once or twice before the final preparation, a week or ten days apart, before sowing, will add very materially to the condition of the soil. Harrow and drag until ground is in condition.

Equal in importance to a firm seed bed is fertility of soil. If ground has been heavily manured for the crop immediately preceding wheat, then further fertilizing may be unnecessary; otherwise a top dressing of stable manure, or one hundred and fifty to two hundred pounds of some standard brand of commercial fertilizer should be applied. A full discussion of the advisability of using commercial fertilizers would occupy more time than you have allotted me; suffice it to say that the weight of evidence is largely in favor of using them. However, if much stock is kept on the farm (and this should be the case in every county in our state) and all the grain, hay and corn-fodder is fed on the farm, and the manure all carefully husbanded, then commercial fertilizing may be unnecessary; but even then I find it more profitable and convenient to haul the manure, as made, to the field in the winter season and plow it under for corn, applying commercial fertilizers to my wheat, a plant which requires more condensed and convenient food than corn. My personal experience in the use of commercial fertilizers convinces me that they doubly repay the cost in the increase in wheat, and insure a good set of clover and timothy, promoting a vigorous growth of the same for several years after.

I am almost always asked at the close of this paper "what brand of fertilizer do you use?" This proves to be a very delicate question to answer, as we usually find two or three local fertilizer agents in each community selling the only reliable article. The fertilizer laws of our state require all companies selling fertilizers to take out license and have their goods analyzed by or under the direction of the Secretary of the State Board of Agriculture. There are several hundred brands sold in Ohio. Tabulated analyses and valuations of same can be found in the annual official report of the Secretary of the Ohio State Board of Agriculture, W. W. Miller.

A careful study of this report will show you the percentages of ammonia, phosphoric acid and potash contained in the different brands and also the valuation of same. The old adage, "Try all things—hold fast to that which is good," is a good rule in the use of this article. Carefully testing a few of the leading brands sold and giving good results in your vicinity, noting and comparing results of experiments, will usually enable you to select what is suitable to your soil. By this method you may discover that you have been buying some element that is already abundant in your soil.

Shallow seeding: If your seed bed has been thoroughly prepared and compacted you will have no difficulty in seeding to the proper depth. One inch in a moist, well pulverized and compacted seed bed is sufficiently deep, and will give better results than three or four inches. I think, aside from freezing out, more crops of wheat fail on account of deep seeding than from any other cause. We see in every wheat growing county of Ohio, this year, very fine fields of growing wheat, and in the adjoining fields sown to wheat you can scarcely discern anything green on the ground. The great difference in nine cases out of ten is due to the preparation of the seed bed.

In sowing corn ground, I would advise shallow cultivation before sowing.

How much seed to sow per acre? is a question that is frequently asked. One and one-half bushels has the greatest number of advocates, unless the variety is very large in the berry, then I would sow one and three-fourths bushels per acre. Sow of the best hard, red variety grown in your vicinity. And I will suggest that you do not discredit our own winter wheat by using Pillsbury flour or some other equally popular brand made from Minnesota spring wheat. True, spring wheat makes a finer quality of flour than can be made of our winter wheat; but we should encourage the consumption of our own products. When to sow: not until you get ready. Sow from September 15, to October 5, according to latitude.

To recapitulate: I urge thorough pulverization and compact firming of seed bed; plenty of plant food, and shallow sowing.

A PAYING CROP.

By Hon. C. A. Coler, Dayton, O.

[Read at the Farmers' Institute held at Germantown, Montgomery county, February 28, March 1, 1898.]

As wheat is again coming to the front as a paying crop, it may not be a waste of time to briefly consider the history, culture and probable returns of this important cereal. The origin of wheat has been a subject of much speculation. Some suppose it to be a plant now extinct in its wild state; others that it is the cultivated form of what are now regarded distinct wild species. We learn in the Bible that wheat under the generic name of corn, was cultivated in Egypt one thousand seven hundred years before the Christian era, and China claims to have cultivated it a thousand years earlier.

The world produces annually about two thousand, five hundred million bushels, and the United States in 1897, produced five hundred and thirty million bushels, valued at four hundred and twenty-eight million dollars. Wheat, next to corn, is the most valuable crop produced in the United States. It furnishes the principal breadstuff of the world, and finds a market in every civilized country. Its various uses are too well known for further comment. What I may say in this paper will be suggestions drawn mainly from experience and observation rather than an attempt at a perfect method of wheat growing, and I have no doubt that the successful wheat growers present will be able to supply omissions and correct errors. There are several varieties of wheat. Winter and spring wheat are only different forms produced by cultivation. By a few years successive growing, winter wheat may be converted into spring wheat, and *vice versa.* There are white and red varieties, and these are divided into smooth and bearded wheat. New varieties are frequently offered as superior in production, many of which are claimed to be old varieties under new names, but the successful wheat grower knows that the yield of wheat, as a rule, depends more upon the fertility of the soil, other things being equal, than upon the variety of the wheat. To grow a good crop of wheat, the ground must be fertile, and if wet it must be well underdrained. No sensible farmer of experience will expect to grow a full crop of wheat on thin or worn out, or on wet and spouty land. If the land is poor, it must be made productive by one or more of the known fertilizers, namely, clover, barnyard manure or commercial fertilizer. When ground is to be broken for wheat, it should be plowed as soon after harvest as possible, so that it may be well settled before being seeded, and if practicable, it may be plowed just before or during harvest with equally good results. Not plowed on the cut and cover plan, but all the ground nicely turned to the depth of four or five inches, and if inclined to be wet, an inch or two deeper. If it needs fertilizing, it should be treated to a top-dressing of well rotted barnyard manure as early as practicable after being plowed. This freshly plowed ground will absorb the fertilizing properties of the manure and attract the rich gases of the atmosphere, and if favored with a good shower or two of rain, will in a few weeks become quite friable or easily pulverized. As soon after top-dressing as the ground is in condition to work, it should be leveled up by harrowing, and if cloddy or in need of packing it should be rolled. In this locality, as a rule, seeding should commence between the 10th and 20th of September, owing to the season. For instance, last fall the protracted drouth made seeding late; farmers fearing to seed lest in the damper ground the wheat might sprout and then perish from the want of rain. But I would advise not to wait longer than the 20th of September, even should it continue drouthy. Wheat well set in the fall will pass through the winter in much better condition than the late sowing. Before sowing, a seed bed two to three inches deep should be carefully prepared.

I once heard a lecturer who had traveled in England and on the Continent in the interest of agriculture, say, that when a farmer over there had a field ready for seeding, it had the appearance of a well prepared garden for its spring seed. This partly accounts for the heavy yields of wheat in England and on the Continent. When the ground is very dry and loose, it generally pays to roll the seed bed before drilling. Care should be taken not to work the ground too wet. Take up a handful of ground and squeeze it tightly in the hand; then take the lump between thumb and finger and press it; if it breaks into pieces easily, the ground is in condition to work, otherwise it is too wet. Working ground while wet, injures both crop and soil. Before sowing, all stones that would in any way obstruct the reaper or mower, and all stumps that can be easily removed, should be taken off the field. This will pay well by saving the breaking of machinery and delays, and the running down and wasting of grain. Seed wheat should be as free as possible from all damaged grains and other seeds. It may be cleaned in a fanning mill, or a few acres may be cleaned in the field; the latter is probably the better way to get rid of cockle, especially in the small grained varieties like the Hickman. The Poole, Red Fultz, Wyandot, Hickman and several other varieties have done fairly well in this locality the past few years. The Experiment Station gives the Valley wheat for the lower and stronger loam of the state; Penquit's velvet chaff for the black soils, and the Poole, Mealy, Red Fultz and Deitz for the higher and especially clay lands. The Rudy and Nigger do well on dry, rich soils only. Smut in seed wheat may be killed by letting the wheat lie in copper sulphate for ten minutes; solution, four pounds copper sulphate to ten gallons of water. This kills the smut germ effectually, but the vitality of the wheat is somewhat impaired. Water heated to one hundred and thirty-four degrees, is probably better, as it does not injure the wheat. See Bulletin 84, Experiment Station. Much is lost by using poor machinery, or machinery in bad repair. The drill should be examined and put in good order before going into the field. Six pecks per acre seems to be about the quantity to sow in this locality; and five pecks per acre where all the conditions were favorable, have occasionally yielded as well as more. When sowing, the ground should be in such condition that it will close in after the drill hoes, and cover the wheat to the depth of one to two inches. The wheat should all be nicely covered, not scattered on top of the ground.

I have had occasion to examine fields a few weeks after they were seeded, and occasionally found as much as ten to twenty per cent. of the seed not covered and many skips. The ground either lacked a seed bed, was too wet when sown, or the drill was out of order, run partly empty, or the hoes choked. This slipshod way of putting in wheat accounts largely for the many half crops we get. If the ground has much trash on it, as is often the case with corn ground, it will pay well to have an extra hand to keep the drill hoes clean. It is probably better to drill north and south; this gives the wheat the full benefit of the sun, and the ridges of ground formed by the drill hoes protect the wheat from the sharp western winds. If, however, the ground is wet and liable to freeze it is better to drill east and west. Tobacco ground is reliable for wheat. Nicely harrowed and evenly drilled, a good crop is generally assured. Tobacco, wheat, and clover is a good rotation, and usually a paying one. Corn ground is now extensively sown to wheat, which yields fairly well where a bed of clover or a liberal coating of barn yard manure has been turned under for the corn crop. In the absence of other fertilizers a good grade of commercial fertilizer can be used to advantage, especially on clay lands. It generally produces a good yield and a very good quality of wheat, but should be followed by sowing the ground to clover.

When corn ground is to be sown to wheat and the corn shocked in rows on the field the shock rows should be seeded to wheat in the fall or sown in a spring crop to prevent them growing up in weeds, and in this way setting the farm in weeds. There has been a steady falling off in the yield of wheat in the older states. New York has, during the past century, dropped from twenty to thirty bushels per acre to from five to seven bushels, and in Ohio the average diminished in fifty years from twenty-six bushels to about half that amount. This decrease seems to be due to the lack of a proper system of agriculture, as is shown by the fact that England with a less fertile soil than Ohio and where the land has been under cultivation for centuries produces thirty-six bushels per acre. There is often a considerable loss in the crop between the commencement of harvest and time of marketing—shattering by being cut when dead ripe; carelessly shocked, about one-fourth the shocks falling down in a few days simply from the force of gravity; left in the field until the grain and straw are badly bleached and the grain sprouted; put in the mow or stack wet, to further damage, or thrashed when too damp to keep, and sold at cut prices. This loss should be avoided by timely cutting, careful handling and shocking, and by taking the wheat in out of the weather as soon as cured. For the past few years it has been claimed that growing wheat did not pay. This was probably true during the late period of low prices, and is undoubtedly true even when we get fair prices but grow only half crops. To illustrate, take ten acres, twenty-two bushels per acre as a full crop at ninety cents per bushel; after deducting entire cost until ready for market, including interest on land valued at fifty dollars per acre and tax on forty dollars per acre, the ten acres will give eighty dollars and eighty cents net profit. While thirty acres on same basis half crop, or eleven bushels per acre, will give a loss of twenty-eight dollars and twenty cents for the thirty acres, or nine dollars and forty cents loss for ten acres. The average price of wheat in the United States in 1897 was eighty and eight-tenths cents, nine and four-tenths cents less than I have allowed in this illustration, which would still make a worse showing for the half crop. Should we apply twenty-five dollars in fertilizer to the ten acres we would still have fifty-five dollars and eighty cents net profit. Half crops don't pay, and it is a great mistake to sow more acres to make up for a small yield per acre. If land is thin, better sow only what can be put in condition for a full crop and sow balance to clover as a fertilizer and for the turning on of live stock.

There are reasons for believing that there will be no material decline in the price of wheat in the near future, such as we have had in the recent few years. The best wheat lands of the world have been under cultivation, and the maximum yield seems to have been reached in 1894, namely, two thousand, six hundred million bushels, which has since gradually declined two hundred and forty million bushels While the price of wheat in the United States has steadily risen from forty-nine and eight-tenths cents in 1894, to eighty and eight-tenths cents in 1897, and the price is still advancing; again, the increase in population and the extending of the world's commerce will increase the demand for wheat. Like the ebbing and flowing of the tide a period of depression is usually followed by a period of prosperity. While but few things are absolutely certain, we believe the outlook for the wheat grower is encouraging.

OUR DAILY BREAD.

By L. E. CHAMBERLIN, Piqua, O.

[Read at the Farmers' Institute, held at Piqua, Miami county, February 21 and 22, 1898.]

When we consider the question of "Our Daily Bread" we consider a question of great magnitude—a question of great importance. It was a question before the people at a very ancient date and I think it will be a question at a very late date. The home without bread is a sorry place and the cook in any place would be poorly equipped without flour, for when we think of the many things in the way of eatables that are prepared for the table of which flour is a prominent part, it is not only daily, but about three times daily.

The farmer must raise the wheat; to the miller it must go for the flour to be made from it; the flour then to the baker for the bread.

There are different kinds and varieties of wheat and different kinds of flour—good and poor bread. I think the best bread I ever tasted was about five o'clock in the afternoon when I was a small boy, just home from school—the slice that I coaxed mother to give me. But while mother's bread was good, I think it was my appetite that helped the case along. At all times the appetite has a good deal to do with the quality of the bread.

My idea of the farm would be to raise the different kinds and varieties of produce that I would want for my own use, at least, and as I would want bread I would raise wheat, and as my city neighbors would want bread I would raise wheat for them. Nearly all other produce of the farm simply has its season and is but short-lived, but this question of bread, the staff of life, is every day, the year round, consequently I would raise a large quantity of wheat.

I am not here to tell you of or about the profits in raising wheat, or the proper time to sell it to obtain the highest price of the season. I do not know when it will be a dollar per bushel, but my advice would be, get it ready for the market, then sell it if you need the money, or when you do need the money, and not try to follow the Chicago speculators and corner the market, for the most sanguine of them get fooled occasionally. Don't think that the miller's part of this wheat business is all profit. Raise as good wheat as possible and take it to the miller who will give you the largest quantity of the best flour, and try to have as good bread as possible.

I do not think, from my knowledge or recollection, that the farmers of these middle states have made much advancement as to the quality of the wheat raised in the past few years. It is a question if it was not better when the soil of these states was new; but perhaps this is more the fault of the soil and climate than the farmer, yet it is possible for the farmer to look closely after the varieties. The baker, particularly the professional baker of today, is looking closely after this feature of his bread material, or stuff, as it is commonly called. He is inquiring for a flour made from a hard variety of wheat—a wheat that is flinty and hard in substance. All of our white wheat varieties are of a soft nature.

The miller has made great advancement in the process of making flour the past few years. The steady call for whiter flour—I will not say better, for that is still a question—has compelled him to make his business a study. It has compelled him to be continually buying new and improved machinery, almost to the verge of bankruptcy, until today most mills are grandly equipped for making flour. They did not go to all this expense from choice. They were compelled to or go out of the business, as many did.

"The world could thrive were there a few
Great industries forever still,
But what a wail there would ensue
Were lost each miller and each mill."

The mill that my father made flour in for his neighbor farmers for many years, and which was my playground when a boy, is there yet, or what the elements have left of it; but it has been a number of years since its wheels have turned. The flour that the mill made in those days was good, then why is it not running? Simply because it was not improved when the fashion changed and the call was for whiter flour. I can remember that occasionally some one would want extra white flour. It was then necessary to have white wheat to make it from, but the miller of today can make white flour from red wheat, for the reason that with his improved machinery he is able to keep the colored part, which is the hull or bran, separate from the flour. The miller with his old style of mill has gone out of business, but not from choice, he was compelled to do so.

The professional baker has made great advancement in the art of baking—competition has forced him to make his business a study. But the unprofessional baker has not made much advancement. Baking day at the farm house is the same it has been for years, and they have good and poor bread from the same sack of flour, the same as they always did. If they do not have good bread from one way of making it, they try some other way the next time,—perhaps change yeast with their neighbor,—and then if they do not have good bread, the miller will catch it. The professional baker was never known to change yeast with his neighbor. If he does not have good bread one way, he finds out what is the matter with that way and that settles it.

The miller knows from whom he has the most complaint. He knows that it is from the domestic baker in extreme weather—in extreme cold or warm weather. That goes to prove that she does not look closely after the temperature. We do not hear from the professional baker any more at these times than at any other. But I want to tell you that the miller knows he cannot deliver flour to the professional baker when he is baking in cold weather, for the reason he will not have the outside door opened. He knows that the room must be kept at the proper temperature. In the warm weather he shortens the time in the process. The professional baker bakes for a profit—competition having compelled him to study his business very closely. He is telling the miller just what he wants, and I can see that he is about ready to tell the farmer what he wants. What the professional baker of today says goes a long way, for he belongs to a very extensive class. He says to the miller that his flour must have age—he does not want fresh ground flour—it must be at at least two or three weeks old. This is one trouble with the domestic baker. The farmer takes too small a grist to mill, consequently he is continually having fresh ground flour. It is the case that flour is better for having some age. You may have noticed that the last of a quantity of flour gave the best satisfaction. This is where the idea is obtained that there are two kinds of flour in the sack, which is almost an impossible thing with the mill of today. Flour will keep, when kept in a dry place, at all times of the year, unless it be during July and August.

Then, again, the professional baker tries to continue with one mill or the same brand of flour, for the reason that he gets used to it and learns how to handle it. While all mills make good flour, it is not all of the same granulation, some being coarser than others, consequently it must be handled differently. Then, again, the professional baker says he does not want flour made from a white or soft variety of wheat—it contains too much starch, which is the center of the berry. He wants a flour made from a hard variety of wheat, which contains more gluten, that portion which gives the flour the strength; he knows that the more strength, the more bread from the amount of flour, for the reason it will consume more water. He has looked this question up so carefully, that he feels like sending and does send to our neighbor away up in the Northwest, for a part of his flour, for the reason it is so strong—contains so much gluten. This Northwestern wheat, called spring wheat, is very hard and makes a strong flour, so much so that it will take up in the process of baking almost its own weight of water.

I have nothing to say against the professional baker's bread, but if it was all water it would be rather thin. Let me give you some figures along this line. A barrel of spring wheat flour in the hands of the professional baker in the process of making bread, will consume about fourteen (14) gallons of water, or liquid, as it is called. As he scales his loaves in the dough, or wet state, at about eighteen ounces to the loaf, a barrel of flour will make about two hundred and sixty loaves. Our winter wheat, such as is raised here in the middle states, will consume about eleven (11) gallons of water and will make about two hundred and forty loaves of bread to the barrel of flour. Now our neighbor farmer and miller in the Northwest have found this out, and do not hesitate to say: " We are the only people, and our wheat and flour is the only breadstuff." It is surprising how energetic and enterprising those people up in that cold country are. They do not hesitate to say: " We will furnish the world with its flour."

While they are furnishing a good deal of it, for you may have heard of those great wheat fields and those mammoth flour mills up there, they have one thing to contend with, and that is the distance. But they are continually getting better freight rates and consequently they are becoming a strong competitor to the winter wheat farmer, and they do not propose to let him have a market for his winter wheat if they can help it.

You might ask: "What will become of the winter wheat miller when everybody wants spring wheat flour?" We will arrange our mills for grinding it, (the mills that we have now are not well suited for grinding that hard wheat) ship the wheat down here and continue to make flour.

But you cannot arrange your farms for raising it, for the climate and soil are not suitable. So look closely after your winter wheat. Sow good, hard varieties. Be satisfied to consume what you raise and insist upon your city neighbors being satisfied with it, for no matter what their vocations are, they, as well as the miller, are followers of the near neighbor farmer, and when he does not prosper, they will not.

Those western people are quite enterprising. They are actually canvassing our large cities, from house to house, and do not hesitate to say that they will only be satisfied when every one is using flour made from the wheat they grow. This means a market for their wheat only.

Do not be guilty of selling your wheat and buying flour for your own use made from a wheat that you cannot grow. I want to say to you that spring wheat flour is only good for bread. For all kinds of pastry and crackers, winter wheat flour is the best; in fact, it is the only flour for these articles.

How soon these farmers in the Northwest will wear out their land for raising wheat, I do not know, but it is true they are doing nothing to keep it up, depending almost entirely upon new land each year.

The consumption of flour in the United States on an average, is equal to one barrel per year to each inhabitant, a family of five requiring about five barrels each year, which of the average grades of flour means about five bushels of wheat to the barrel.

Look closely after your winter wheat and let the battle cry be, "We raised wheat here first and we propose to continue."

FRUIT CULTURE.

By JOSEPH H. HECKER, Chesterhill, O.

[Read at the Farmers' Institute, held at Chesterhill, Morgan County, Dec. 29 and 30, 1897.]

In order to continue an enterprise, we must realize profitable returns, hence, let us first consider the profit in dollars from fruit culture.

The first questions which a farmer should ask himself, are, will my land grow wheat, corn, apples, etc., at a profit? If it will not grow this or that crop, why not? If there is some inaptitude of climate or radical unfitness of soil, this crop should be laid entirely out of consideration, and his attention devoted only to what can be grown to advantage. If it would cost more, for instance, to make a farm produce wheat than the wheat will be worth when grown, then put wheat entirely out of the question; but if it is found to be profitable to grow wheat, then let the land be put in condition to grow good crops of it, whether the cost of the renovation be five dollars per acre or twenty-five dollars; and if we arrive at the conclusion that these high hills are so well adapted to the raising of fruit, (and I am quite sure that this should be our conclusion), then why raise the common crops when by raising fruit our income would be much larger? Probably more money would be made on apples and peaches right around Chesterhill, and the only reason why the smaller fruits cannot be as profitable is simply because we are minus the shipping facilities; if we were close to a railroad, then by all means would it be profitable to raise the small fruits as well.

For orchards, some prefer land previously cultivated, although a clover sod turned under and finely pulverized is equally as good. Remember that the fruit garden and the orchard require good soil and the best culture, and of all farm work it pays best for work done, and suffers most from neglect. I need not emphasize the importance of thorough cultivation; you farmers understand how important that is in your corn fields, and it is just as much so in the orchard. You will make no mistake in selecting your best land for an orchard. The large number of orchards that have been lately planted and have proved unprofitable, owe their failure, mainly, to the fact that they were originally planted on land, the fertility of which had been exhausted by long continued grain cropping, and, in some instances, the orchard was planted because the soil would no longer produce grain crops.

Too much care cannot be exercised in the selection of varieties. If for market, three or four varieties would be a large number, unless planting largely; of course for home use the planting of the same number, each, of summer, fall and winter varieties would perhaps be advisable. An apple buyer would give much more for one hundred barrels of one good variety, than if the lot was composed of ten or twelve varieties equally as good.

In selecting trees, either peach or apple, it is generally conceded that the small, thrifty ones are the best in the end.

A word about planting: It cannot be denied that many trees and other products of the nursery perish in the hands of the planter. It would be very strange if it were otherwise, and yet there is no necessity for loss, if proper care is given. The first failure is the inexperience of the planter. Few who receive nursery stock have sufficient experience to properly plant it, and yet a good many individuals seem to think that they understand the business thoroughly and need no advice or assistance. An excellent plan for one who is inexperienced would be to secure the services, if possible, of an experienced planter, or his advice or supervision, especially if planting largely. Another cause of failure is poorly prepared soil. When successful farmers prepare wheat ground, they are careful to make their work thorough; but when planting a fruit tree, they seem to think that they are planting something that is able to take care of itself, something different from seed wheat, which must actually sprout and take root, yet trees require as fine soil as any farm crop. Remember care must be taken in setting a tree or plant, for you are setting them out for profit and not simply to see whether they will grow or not. To make the most profit out of an orchard, it should be as carefully cared for as any other part of the farm.

One of the most important requisites for making apple trees bear early is to furnish them plentiful supplies of potash and phosphate. The tree can usually find enough potash in ordinary soil to make sufficient wood and leaf growth, but it cannot produce fruit unless it has an excess of potash and some addition of phosphate.

Considering the fact, that, to be really successful, all orchards hereafter planted must be fertilized, and also the fact that greater skill and care are now needed to guard trees and fruit from insects and fungus enemies, there is less danger than ever before that apple growing will be overdone. We believe that the assertion is not too broad when we say that for all who keep up to the times with the new methods, the growing of apples for market will be more profitable than any other branch of farming; the business needs to be made the most of that can be, but in this it is only like other branches of fruit growing; it needs less labor per acre than do some of the smaller fruits, and for this reason it is better adapted to farmers who grow fruit in connection with ordinary farm crops.

If the same attention, labor and expense for fertilizers are given the apple orchard that are given to the growing of wheat, it cannot be an incumbrance, but will soon be the most profitable part of the farm.

Someone says—"O, if we all raise fruit, we will overstock the market!" Listen, it is a poor grade of fruit that gluts the market, there is never an oversupply of a superior grade of any fruit. Fruit growers must study the market; they must find out what the market wants and then go to work and grow it. People, as a rule, buy only what they want. It is very common for fruit growers to know less about the fruit market than do the shippers or dealers, which is a great mistake; the producer should know more than the dealer. Of course, production is the great work of the producer, but the marketing of the fruit should be scarcely second to it. The tendency is for the producer to stay too much at home with his trees and vines, and to work too many hours; he does not take the time to get away from home enough to study the market and the demand. Such a man is liable to ship his fruit to Baltimore, when the price is one-third more in Chicago. A man who is thoroughly awake to his own interests will not do this.

To properly prune a fruit tree is an intellectual exercise requiring considerable thought and sharp observation as well as a sharp knife. To grow good, fully developed, richly colored apples, it is necessary to have the tops of the trees so thin that the sunlight shall fall upon every apple and the air circulate freely among them. While it is not advisable to cut off any of the last year's growth from apple trees, it is much the best way to do in peach tree pruning, for, when thrifty, the peach seldom matures to the tip and as it forms fruit buds on the new wood, cutting back one-half of that wood, would cut off but a little more than the weaker, frost-bitten buds, and the remaining buds would develop into larger, better fruit and more in bulk than if all were suffered to grow. So many different opinions as to the time to prune apple trees are given, that it would be hardly proper for me to say what time is best; however, any time is better than not at all. Neither shall I say what varieties of apples to plant, but bear in mind that an apple or peach that will sell on its looks is worth cultivating for market.

The introduction of new fruits has done much to promote good culture, good gardens, orchards and vineyards, from the fact that when a man buys new fruit and pays a fancy price for his trees or plants, he will give them his best attention. He not only plants in good soil, but gives thorough cultivation, watches their growth, notes the good qualities and thus the result is almost as good as with the originator. Is it not possible, then, that the high price nurseryman may be doing some good after all? But, beware of frauds. Not long ago an Ohio nurseryman in his advertising proclaimed the qualities of a new variety of blackberries, and then resorted to the thickets and fence rows all over his country to procure plants to fill the large number of orders which were sent him in good faith.

With an evaporator, raspberries may be grown at a profit even at a distance from market or railroad. A sand loam is the best soil for them. Plant in the spring season in rows, three by eight feet. Be careful to plant them properly and then cultivate thoroughly. A fair crop may be harvested from vines one year old. The best crop is generally that of the third season and if properly cared for, there is no reason why they should not stand ten years. It is better to remove and burn old canes as soon as berries are harvested. This work may, however, be left till spring, then thin hills to four or five good stalks, prune those remaining according to their strength, three or four feet being the rule. An acre of raspberries ought to produce at least seventy-five bushels and may be made to produce much over one hundred bushels. Plant Gregg, Hilborn and Palmer for black cap varieties and Cuthbert and Royal Church for red. Strawberries cannot be grown at a profit unless close to the railroad, but I cannot understand why every farmer has not added this delicious, health giving berry to the luxuries of his table; it is not lack of land, a space thirty feet square will supply a family of a half-dozen; it is rarely the lack of taste for the fruit, and it cannot be the lack of time, for a few hours a year is all that need be devoted to them outside the picking Surely there is no good reason why every farmer should not have strawberries. The same is true of the other fruits. Every farmer should supply his home with pears, quinces, plums, grapes, currants, gooseberries, blackberries and cherries, aside from apples and peaches which are almost necessities.

Not every man will make a success in fruit growing, neither will every man make a success of any business. Some start out in fruit growing simply because their neighbor succeeds well. They have no natural taste for fruit growing. Without any particular aim or desire to excel they start out in the enterprise and after a brief experience drop it and take up some new idea that is going the rounds, hence, they never succeed in anything. Fruit growing should be made a life work, although we have heard of men who began when well advanced in years and were eminently successful; but it certainly looks reasonable that the young man who can prepare himself by a course of study, if not in some agricultural college—than which nothing would be better—then by studying the journals and works of horticulturists, which are so plentiful, is better prepared for the work than those who have less opportunity. Life is too short to live solely for the purpose of making money; of course we must make some money in order to continue the work, and this important consideration is not often lacking, but to my mind it is a greater consideration that our lives are made enjoyable and happy in the pursuit of our enterprise. It is a waste of life to pass it in burdensome labor; we should get pleasure from our daily work and the more pleasure we get out of it the more likely we are to get the money reward.

A fruit grower may not achieve great wealth nor fame to any great extent, but he can make some part of God's creation more fruitful and thus more worthy of God; make some human hearts a little wiser, better, happier, more blessed, and this should be greatness enough to satisfy the longings of any man.

Since the days of the wise man of Israel, a medium position in wealth has been considered the happiest, yet in spite of this, few men in the world have been content when they achieved the modest competence and the moderate position in society. They still went on laboring and achieving until they had attained the greatest wealth and the most extensive social power that they could. Only when they reached old age and like the wise man of Israel desired chiefly to be delivered from vanity and lies, did they realize how little power great riches possess.

In the same chapter where Paul speaks about the love of money being the root of all evil, he also says that "Godliness with contentment is great gain." So, whatever our position in life, whatever our occupation, let us bear in mind that it is only religion, the great bond of love and duty to God that makes any existence valuable or even tolerable.

PEACH CULTURE.

By PERRY L. BEAL, Dresden, Ohio.

[Read at the Farmers' Institute, held at Dresden, Muskingum county, February 7 and 8, 1898.]

The subject of peach culture is very much too broad to discuss even in a brief or general way in fifteen or twenty minutes. I shall make no attempt to cover the whole subject, but will confine myself principally to cultivation and thinning, and will have to be brief even with them. Nor do I think it necessary to discuss the whole subject, as our lack of success as peach growers is not due so much to our not knowing what to do, as it is to our not putting into practice what we do know. But, in brief, judging from our own experience and the experience of those we have noticed and heard from, we have good reason to believe that the highest financial success can only come to those who give the closest attention to all of the very many details that go to make peach growing a success, and a very important point is that thorough work in one line may be even worse than useless by lack of care in another; such as cultivation without being followed by the pruning of the tree and the thinning of the fruit.

Our natural advantages for peach growing in this locality are certainly not above the average, and our varieties, I think, are no better; while we have done some pruning, a little manuring, and perhaps have taken more care in picking, packing and grading than some others, and although we think it has paid us well, our little success, if any, has been much more due to cultivation and thinning than to anything else. But we have also found that there are other things of equal importance for higher success, such as location, thorough drainage and good varieties. There may be conditions under which it will not pay to cultivate, such as very rich land, or in an exceptionally wet season; but with land of only moderate fertility, such as we consider is best for peaches, thin land in a dry year, especially with a crop of fruit on the trees, we think there can be no question as to its value, if the cultivation be shallow, when ground is in good condition, and at the right time of year; the chief danger is with young trees on rich land and the continuing of it late in the fall.

Peaches are mostly water, and, in a dry year, water in abundance is an indispensable necessity for the highest development of the peach; the difference in soil moisture of ground with a growing crop on it and clean cultivated soil is very strikingly shown by an experiment conducted by the Cornell experiment station, New York. Samples of soil taken from an oats field contained but 4½ per cent. of moisture; cultivated ground not five feet away contained 13 per cent., or three times as much.

There are two orchards in plain sight from us, one five, the other seven years old, the same age and on ground similar to two of our orchards; those have received little or no cultivation after the first year or two, and ours have not received as much cultivation as they should have had, but the difference is so striking and plain that I think no reasonable man would question that cultivation has paid us well. Our seven year old orchard, after growing a crop of corn the first and second years, the third summer gave us a crop of peaches that after paying for the cost of trees gave us at least fifty dollars an acre for the land they occupied. In 1896 they netted us at least seventy-five dollars an acre. The five year old orchard on very thin land gave us at least forty dollars per acre. Regarding our neighbor's orchards, I doubt very much if they have, on an average, paid ten dollars per acre gross income, and the chances for future profit are at least five to one in our favor.

Cultivation in 1893, I am satisfied, made the crop for us in 1894. Where we cultivated fairly well we had a good crop, some trees being so full that thinning was necessary; where we simply plowed a corner in another orchard, there was a sprinkling of peaches on most of the trees, and in the next row where no plowing or cultivation was given there was scarcely a peach and in all the rest of that orchard of some six hundred trees I don't think you could have found a bushel of peaches. The result was so plain that no man could convince me but that cultivation practically made the crop that year, and as what peaches we had netted us one dollar and twenty-five cents per bushel, the loss was not a little. It is these off years that make the easiest money, and what has happened once will very likely take place again, and as we firmly believe that cultivation pays, even if we do not get a crop when others do not, the chance of doing so adds no little to its value. But it seems as though every good thing has its cost, and cultivation is no exception. On most land washing is a serious drawback to cultivation. To prevent it last summer we plowed furrows every seventy-five feet, more or less, depending on the steepness of the land, along the side of the hill at as easy grade as possible. The idea being to check the water as it rushes down the hill, before it gathers either volume or velocity enough to do serious damage, and carry it off slowly to the main ditch, or out on a sod field. We expect to try it next summer and believe that the perfecting of the principle will greatly diminish, if not prove a perfect preventative of washing in both summer and winter. As we leave them open all winter, they also have to be opened after every cultivation.

In winter we want a crop of rye on ground if rich. On thin land last fall we tried a mixture of rye and crimson clover, and it is doing well among young trees, but not in older orchards on account of being too dry at seeding time. If no crop of fruit is on the trees, I would sow the first of August; if a dry year and a fruit crop, would cultivate until fruit is off the trees, if possible. In a dry year it is almost impossible to get a set of rye among large trees, but I would cultivate any way and run the risk.

We cultivated our trees last summer from thirteen to sixteen times with the cutaway orchard harrow, with extension board in, which makes it nine feet wide instead of six, and also used a ten foot straight or slant tooth harrow; these are the best tools we know of for the purpose. We think our orchards, taken as a whole, are in much better shape than ever before for a fruit crop this year.

As for thinning, we have no doubt whatever as to its value for us. Our first experience was in 1894 when we thinned some twenty-five or thirty Heath cling trees, leaving two unthinned, taking off at least half of the fruit, and we should have taken off at least half of what was left; but as it was, the trees we thinned gave us nice, plump peaches, and clear of cash expense cleared us three dollars and fifty cents per tree. The two not thinned, cleared at the very most not more than one dollar per tree. The most of the peaches never got ripe, simply wilted up green and were not picked. The cost of thinning was not more than fifteen cents per tree, and as it made a difference in profit of at least two dollars and fifty cents per tree, it was certainly a very profitable investment. But that is not all of it; in 1896, the trees that were thinned in 1894, gave us a good crop, so full that thinning was again necessary. The two not thinned in 1894 needed no thinning, did not have one-fourth as many peaches as the other trees after being thinned, showing very plainly the after benefits of thinning; in 1896 we thinned all our peaches except a very few left for comparison, borrowing the money to do it, hiring some ten men for two weeks, paying them ten cents an hour and letting them board themselves, and for every dollar we spent we are satisfied that we received at least five dollars in return. Taking into consideration the after benefit we think ten dollars is not too high an estimate of the good accomplished. We have but little doubt that our trees, with the care and cultivation we give them, set more fruit than trees that take care of themselves. The average cost of thinning was about six cents per tree.

To give any safe rules for thinning is practically impossible; so much depends on the size, variety, form and general condition of the tree. In 1896 we certainly thinned our peaches to at least six inches apart and the greater majority of trees were entirely too full then. This year if we have a full crop of peaches, we shall leave none of any variety closer than eight inches apart, and of some kinds will thin to ten, twelve or possibly more; that is for trees with all weak and crowding branches cut out, and after having cut back last year's growth at least one-third. The same distance apart on trees not thinned out and not cut back, would in some cases nearly double the quality of fruit left on trees. The time to thin is as soon as the faulty or weak ones turn white, when you can see the stings of the curculio, generally about the time the largest ones are one-half to three-fourths of an inch in diameter the short way and before the seed hardens. The knife to thin out and the long handled pruner to cut back can be used as an aid, but can never take the place of hand thinning. Thinning can often be done in the early spring by yourself and save the cash expense at the real thinning time. But the best advice I can give, is to come over to our place next summer and see us at actual work and you can get a much better idea of what we think is right than any other way, providing, of course, we have a crop of peaches.

As for varieties, if I were going to set an orchard next spring and had no other trees out, and knew no more than I do at present, there would not be more than four varieties in it. They would be Old Mixon, Elberta, Late Crawford, and last, but by no means least, the Solway, which on good, but not excessively rich land, with plenty of humus in it, lying to the east or south, high up, with thorough cultivation, good drainage and severe thinning, we regard as the best pocketbook filler of any peach we have ever had anything to do with, and we have experimented with at least twenty-five different varieties. The conditions necessary to bring it to perfection are many, every one important, and the omission of one may make it as worthless a peach as any old seedling that ever came to life. Our Smock and Lemon cling of the crop of 1896 netted us eighteen cents a bushel; all varieties the season through, forty cents; and our Solway one dollar and twenty-six cents a bushel, some selling as high as one dollar for a twenty-pound basket containing less than fifty peaches. Our orchards averaged sixty-five dollars an acre clear of cash expense; five hundred of the one thousand three hundred trees in bearing age were only four years of age, on very thin land, and at least half of our peaches were Smock and Lemon cling and ripened at the worst possible time for high prices, or our showing would have been much better.

I am satisfied that in time, with prices no better than in 1896, we can at least double the income from the same land. And with prices and conditions precisely the same as in 1896, with the benefit of the knowledge we gained that year, we could increase the net income from ten to twenty-five dollars an acre. We would thin more severely, would use nothing but the Michigan twenty-pound baskets, with the possible exception of some six basket carriers for fancy fruit as an experiment, and would get daily reports from the market by wire.

THE SUGAR BEET.

By M. C. Sweet, Garrettsville, O.

[Read at the Farmers' Institute, held at Garrettsville, Portage county, January 21 and 22, 1898.]

Perhaps the two most important acids used in the preparation of food for mankind are salt and sugar. The first is found in vast deposits all over the earth's surface; the last is never found in its pure state or in mineral form, but is obtained only in solution in the sap or juice of vegetables and trees. The only tree so far discovered from which pure sugar can be obtained in any large amount is the maple. Among vegetables the sugar beet and the large family of canes.

While all our hard grains, especially corn, contain sugar, it has not been found possible to separate it from other elements.

As the maple product is only abont five hundred tons per annum and is largely used as a luxury in the form of syrup, the world must depend on the beet and cane. For the year 1896 the estimated yield of cane sugar in the world was two million, seven hundred and forty-seven thousand, five hundred tons; of beet sugar it was four million, nine hundred thousand tons.

Of this supply the people of the United States used one million, nine hundred and sixty thousand, and eighty-six tons, while we only produced three hundred and fifteen thousand tons. The consumption of sugar in the United States has increased for the past twenty years at the rate of twelve per cent. per year.

With such an immense market at our doors, it seems almost incredible that there are in the United States this fall and winter only nine factories, making about fifty thousand tons of sugar, while Germany, with less than one-fourth the amount of beet lands that we have, has three hundred and ninety-seven factories, which produce one million, eight hundred thousand tons of sugar.

That we have not made greater progress is due to no lack of proper soil or climate. We have what is called a beet sugar belt, stretching from ocean to ocean, hundreds of miles in width, inferior in few parts to Europe, and in some sections surpassing Europe's most favored beet districts in both soil and climate. But it seems that, for some reason, the people have got an idea that they cannot raise beets, something is wrong somewhere and they do not think they will ever pay.

The United States Department of Agriculture has taken hold of the matter in a business like manner, and has encouraged the farmers all over the country to make experiments in the cultivation of sugar beets, and now I propose to give you some facts as to what can be done and what has been done right here in your own neighborhood.

First. Mr. C. E. Tinker, of Nelson, in the summer of 1897, raised a plot of sugar beets one hundred and twelve feet long by twenty-two feet wide, drilled in rows two feet apart and thinned out from eight to twelve inches apart in the rows; soil, a sandy loam, nearly level, on a creek bottom, had been cultivated for a few years in onions and garden truck. From this plot, which contained nine rods and sixteen feet of land, he harvested one hundred bushels of beets, a little over eleven bushels to the square yard, or one thousand, seven hundred bushels to the acre or about fifty-one tons.

Second. I have raised sugar beets for the past four years and have never had less than twenty tons per acre, until 1897, when my yield was only about fourteen tons, on account of continual rainy weather, which packed the ground and made a portion of my plot a failure; and yet, on a plot ninety-seven feet by twelve feet I had eight hundred and twenty-seven pounds, or about thirteen and three-quarters tons per acre, samples of which analyzed as follows:

Amount of sugar in juice	9.02	per cent.
Amount of solids in juice	12.00	"
Purity	70.03	"

My soil is a clay loam with a subsoil of rock, which makes very bad drainage in a wet spell. However desirable a rock bottom may be on which to build up a fine house, or a good character, I cannot recommend it as the foundation for a garden. From my experience and observation the soil should be well pulverized and either naturally or artificially well drained, and, for this reason, a sandy soil is possibly best. With such land I consider the sugar beet one of the easiest and surest crops to raise, of any of our common vegetables.

To the farmers let me say, "This is the chance of your lives. No other commodity offers such a market. Of the one hundred million dollars sent abroad for sugar, you can have a goodly portion in five years if you will."

If every farmer in this county would this year plant a small plot and test the matter for himself, I am sure that enough of them would go into the business to warrant the building of a sugar plant.

"But," says some one, "it costs money to build a sugar plant and where will you find a half million dollars?"

Now it is one of the strange facts of history that Capital is always ready to help if the people want to build up any business which promises to pay, from a tin mill to a railroad. Capital is always ready, in fact.

One or two sugar plants have been built in this country and have been failures because they could not get the people to raise the beets to keep them running.

We have here at Garrettsville a good shipping point in good territory to grow the beets.

Why not have a sugar plant right here this year or next year, at least, in time to commence the twentieth century?

Half a million is a large sum for a small town, but I assure you it is no idle boast when I say that whenever the farmers of this vicinity will guarantee to have four thousand acres of sugar beets ready in the fall, there will be a fully equipped sugar plant ready to work them up right here at Garrettsville.

HOW I RAISE LAMBS.

By F. J. STIERS, Canaanville, O.

[Read at the Farmers' Institute held at Amesville, Athens county, December 15 and 16, 1897.]

My ewes are high grade Shropshires. As the pastures begin to fail, along about the first of December, I begin feeding corn, ground fine, (cob and all) with bran, equal parts, having hay where they can eat at will; so that the change from grass to dry feed will not be too sudden. I keep the ewes sheltered from all hard storms, from about the first of January, keeping them in the barnyard where there is a trough of nice, spring water, and where they have free access to the barn; in stormy weather and at night I shut them in the barn.

I now feed them three times a day; in the morning, meal and bran equal parts, with what clover hay they will eat; at noon, corn fodder which, if the weather is clear, I feed in the yard on the grass, if stormy, in the barn; at night I feed the same as in the morning. From about the first of February, I feed a few mangel wurzels or stock beets—without these I would not think of trying to raise lambs so early—I chop the beets and mix them with bran and meal; I feed this mixture three times a day, together with the usual amount of clover hay and corn fodder, gradually increasing the meal and beets ration until about the middle of February; when the ewes begin to drop their lambs, they are fed about all they will eat.

If a ewe is inclined to disown her lamb, she and the lamb are put in a small movable pen, about three feet by four feet, in the barn, for a few hours or until she owns it. If a ewe has twins one is very often inclined to wander around and not stay with the mother; in such cases I put her and her lambs in one of these small pens for a while and when they are let out care is taken that the ewe looks after her lambs properly.

I go to the barn every evening about nine o'clock, or later, with a lantern to see after the young lambs and it is surprising how quickly the sheep get used to the light; they are usually all lying down at my last visit to the barn; I walk carefully around among them and step over them, and there is scarcely one that seems startled or afraid.

Once in a while a young lamb will get chilled; in such cases I draw some milk from the ewe or from a fresh cow, in a tin cup, bring the lamb to the house, warm the milk, adding a little black pepper or brandy, and give about a tablespoonfull. A small box is then warmed thoroughly and the lamb is wrapped in hot woollen cloths and placed in the box before the fire, care being taken not to let it get too hot; when the lamb begins to move I give it a little more milk and when it begins to bleat and try to get out, take it to the ewe and see that it sucks.; in most cases it will be all right. I manage to have a fresh cow about lambing time so that if any of the ewes should not have sufficient milk, I can supply the deficiency by means of the bottle, but if the ewes are properly fed one seldom has need for cow's milk.

When the lambs are ten days old, I keep some finely ground corn, oats and bran in a trough where they can have access to it, away from the ewes, also some choice clover hay where they can pick it over, replenishing when necessary. It is wonderful how much they will eat.

As soon as the weather gets warm enough, I let ewes and lambs out on some grass that was saved for that purpose (but only for a few hours at first), this piece of grass not being pastured during fall and winter; if they get sufficient grass to satisfy them I leave off their noon feed; if not, I feed at noon. I continue to let them out each nice day. As the lambs get older I change to other pastures further away, giving them the very best the farm affords, but bringing them to the barn every night as long as there are cold, hard storms. I keep a box of salt, with turpentine mixed through it, constantly before the ewes and lambs as a preventive of paper skin, I find this quite efficient.

Last year I raised fifty-four out of fifty-seven lambs; every ewe was in good condition and showed no disposition to disown her offspring. The first six of my ewes had thirteen lambs, five having twins, and one having triplets. I raised all of the thirteen except one of the triplets; as nature only provided for two, the ewe could raise but two. I always wean the lambs about the middle of August. I separate the lambs from the ewes and keep them apart for one night and a day, then let them together for a short time, after which I separate them again and take the ewes out of hearing of the lambs. I put the lambs on some short, fresh pasture that has been previously pastured with horses and cattle, and feed them bran once a day.

THE SHEPHERD.

By A. T. Gamber, Wakeman, O.

[Read at the Independent Farmers' Institute held at Wakeman, Huron County, January 14 and 15, 1898.]

Many people do not know the value of a good shepherd, nor do they realize the difference in the result obtained in the same flock by a good, faithful shepherd and a careless one. There is no stock at this time that pays as well as the sheep, and it is therefore very important that every flock master be a careful shepherd.

Why is it that the American breeders of English sheep have to be continually importing new blood from England in order to keep up with the times? Mainly, because England has shepherds who know nothing else but to study the wants of their flocks. Their sheep have a regular picnic all the time. They are changed from clover to peas and tares, then to rape, then to turnips and beets. Care is taken to see that they have shade, and every chance given to them day after day until they are fit to sell at a big figure to an American. Of course, we cannot well do that here, nor do we want to. But we can take several steps in the direction of providing for the wants of our sheep that will doubly pay us. It is my belief, that if America would import good shepherds to take care of what sheep we already have, there would be less need of English fed sheep.

A flock of scrub sheep, with a well bred shepherd, will bring double the profits that a thoroughbred flock will, in the hands of a scrub flock master. This country has spent a good deal of sound money in fancy bred and fancy fed sheep. Now, do you not think it would pay, during these very satisfactory times, to turn our attention toward improving the shepherds a little? It will be a saving of money all around and no cash needed.

The shepherd fails most in the early care of his lambs. We cannot insist too strongly that the foundation of the sheep is laid (after properly selecting the sire and dam) in the care given the lamb. No matter how well bred the lamb may be, he will never make a good sheep unless he is given good care. It will be but a few weeks until the crop of lambs for next season will put in an appearance, and every flock master should be prepared to give them a warm reception. Have the ewes in proper condition by feeding (not corn) but plenty of bran and oats, with a sprinkling of oil cake. Then be ever ready to help the little fellows get a start in this world. After they get started, keep them going; never let them stop developing. A lamb that is stunted at the beginning of life never attains its full size. A good shepherd will give special attention to ram lambs kept for breeders another year; they should have even better care than the fattening lambs; do not be afraid of overfeeding them. This sounds a little like "stuffing," as some of my particular friends will say of me, but it is true that a bunch of lambs at this time of the year, or any time, after being well started on dry feed, cannot be fed too much of the following feed: Two-fifths bran, two-fifths oats and one-fifth corn, with a small handfull of crushed oil cake to each lamb, the whole to be seasoned with salt and well mixed. Give them what good clover hay they will eat. The good shepherd will not make the common mistake of crowding the manger full when the clover is not first class, and after letting them pick it over, give to the horses what is left. If the clover is reasonably good we should not feed our sheep any more than they will eat up almost clean. If the shepherd wants to do a little extra by his sheep, let him put about half their feed of hay in their manger loosely, let them eat it, and feed again. Yes, this is fussing; but fussing or no fussing, it pays, and that is what we are after.

In yards that are kept dry and clean by the liberal use of straw, cornstalks fed in long racks, not scattered in the yards for them to run over, are the very best morning feed for breeding ewes; then they have the whole day to pick at them. At night give just what clover they will eat clean; in an hour they are ready to be shut in the shed.

Another thing, the sheds can be kept too warm and close. If the shed or bank barn at night, with a hundred or more sheep in, in an hour or two becomes very close, in the morning when turned out into the zero yard they actually suffer. Have the shed well bedded with dry straw; keep it closed enough to keep the sheep comfortable and not let rain or snow blow in, and by all means avoid drafts in very cold weather. A sheep, if kept dry, will stand a great amount of cold. The yard, also, should be kept dry by the liberal use of straw.

The racks should be cleaned each time before feeding, and all refuse, cornstalks, etc., can be spread around, and we will soon have to raise our feed racks to keep on top. Now, as to grain troughs, experience has taught us that the flat bottom trough is the best and only good kind to use. I much prefer the single to the double trough. One reason is that if we have a trough on both sides, one trough is always exposed to storms, hens and young lambs; nothing suits a lamb better than to get into one of these troughs and hop, skip and jump. Yes, I know there is yet a clean side, but when we turn this clean side up tomorrow morning and the hens and lambs get through with it in time for a shower of rain or snow. then where is the clean side?

A good trough is made as follows: A seven-inch board on the bottom, and a three-inch board on each side, with small blocks at the ends, no legs. In the yard where troughs are wanted, drive down two stakes so that the trough will slide between them easily; nail a cleat about the height you want the trough, this is one end, then do the same at the other end of the trough, and so on for as many as are needed. The stakes should be left at least three feet out of the ground, so that as the manure in the yard rises the cleats can be raised. Then after feeding, always turn troughs over, and we have a clean, dry place to feed our grain., This plan saves making legs for the troughs, which is an everlasting job. Unless attention is given to troughs with legs, the sheep are continually tipping them over and wasting the grain.

Some one has said that "the worst vice is advice." Advice is likely to be much misunderstood. Every one has to work out his own salvation, as it were, and whatever advice he may receive from those older and presumably more experienced than himself, should be taken with discretion; no person can have iron clad rules applicable to each and every case. Advice should be regarded only as a summing up of the principles and courses of procedure which one individual has found productive of the best results in his own case. But my experience leads me to believe that every flock master should be a very careful shepherd.

POULTRY ON THE FARM.

By Mrs. Frank Winn, Lee, O.

[Read at the Farmers' Institute, held at Lee, Athens County, January 24 and 25, 1898.]

The poultry department is generally regarded as one of the most insignificant parts of the farming business—frequently as more of a nuisance than anything else, only to be tolerated to satisfy the whims of the "women folks." So firmly grounded has been this opinion in the masculine mind, that until very recently no effort was made to ascertain the real value of the poultry industry.

For information on this subject, let us turn back to the statistics taken in 1880 in our own state. From these and the national statistics we find that there are about two hundred thousand farms in Ohio. Upon these farms there was found an average of about a dozen fowls, or two million four hundred thousand fowls for the state. If two million of these are hens. and they yield but sixty eggs each during the year, there should be an annual production of one hundred and twenty million of eggs, or ten million dozen, worth, at an average of one cent each, more than a million dollars. If to this we add the value of the poultry consumed at home and sold in the markets, we will find the total amount nearly two million dollars, making a sum greater in value than the total production of rye and barley together, the produce of seventy-seven thousand acres of land; more than a third as great as the value of the potato crop; almost as great as that of cheese; about one-third that of wool; a little more than the clover crop; one-third greater than the combined productions of sorghum, maple molasses and sugar, and honey, and more than ten times as great as the sweet potato crop. If we have made any mistake in this calculation it is that we have placed the value of poultry too low.

In 1890 the actual value of poultry produced in the United States was about two hundred million dollars. This enormous quantity failed to supply the demand, and almost two hundred and fifty million dollars worth of eggs were imported. No one need fear that the business will be overdone as long as we can find markets at home for both fowls and eggs. The amount of the poultry and egg trade in the city of Chicago has averaged over fifteen million dollars yearly for the last five years. Today our enormous wheat crop, which is extolled in every journal in the country, and which excites the admiration of the world, is equaled by the value of the poultry and the eggs produced in the United States, the eggs and poultry finding home markets, while we export a large part of our wheat. At an average of sixty cents per bushel, (which is too low for the last six months only) the total value of our wheat crop is about three hundred million dollars a year. It is known today that the poultry industry has increased in the last twenty years until its value is fully equal to that of wheat and on a par with many other leading industries.

Farmers, is not such an industry as this worthy of attention?

Some will say; "Oh, a very large part of this poultry product is consumed at home." We admit it, but it is none the less valuable on that account, for both the flesh and the eggs of the fowl are foods of the most nutritious and valuable kinds, and if their consumption were increased ten-fold in our farmers' families, and that of salt pork and fat diminished in proportion, the annual saving in doctors' bills and the greater accomplishment of work consequent upon improved health would amount to more, in all probability, than the whole poultry product now.

An eminent writer in speaking of the egg as a food, says: "Eggs are among the cheapest and most nutritious foods for diet. Like milk, an egg is a complete food in itself, containing everything necessary for the perfect development of an animal, as is manifest from the fact that a chicken is formed from it. It seems a great mystery how muscle, bones, feathers and everything that a chicken requires for its perfect development are made from the yelk and white of an egg. But such is a fact, and it shows how complete a food an egg is. It is also easily digested, if not damaged in cooking. There is no more concentrated and nourishing food than eggs. Two or three boiled or poached eggs with the addition of two or more slices of toast, will make a breakfast more acceptable to a man's stomach than that which he usually compels it to receive."

Now for a problem in proportion. The value of one pound of egg, as food for sustaining the active forces of the body, is to the value of one pound of lean meat, as one thousand five hundred and eighty-four to nine hundred. As a flesh producer, one pound of egg is equal to one pound of beef.

Now let us try and find the cost of producing so perfect a food. We may safely say, a hen will consume one bushel of corn or its equivalent, yearly, and she will lay ten dozen, or fifteen pounds of eggs. This is equivalent to saying that three and one-tenth pounds of corn will produce, when fed to a hen, five-sixths of a pound of eggs, but five-sixths of a pound of pork requires five pounds of corn for its production. Taking into account the nutriment in each, and the average prices of the two, the pork is about three times as costly as the egg, while it is less healthful.

Now we do not wish to paint the poultry business in such glowing colors that every farmer present will abandon his wheat fields and stock yards and make his farm one immense poultry yard.

Let me say right here, the poultry business cannot be successfully followed on a large scale, as a rule. The barn yard fowl is so constituted that it does not thrive so well when large numbers are crowded together, but only reaches its highest perfection when allowed to follow the customs of its progenitors in the Indian jungles and wander at will in small flocks. This peculiarity has prevented, to a great extent, the profitable handling of poultry as a speciality, except in the way of breeding improved stock to be sold at fancy prices.

The ordinary barnyard fowls gather a large part of their subsistance from material which would otherwise be wasted. The time occupied in their care, being chiefly that of otherwise unoccupied members of the household, is not felt; consequently whatever they may produce in the way of eggs and flesh is so much gain. So with a little more care and expense how easy it would be for the farmer to make the poultry department one of the most successful branches of his farming.

It is a business involving but little manual labor, and that of a light character, but it does require daily exercise in the open air: hence it is admirably suited to women aad delicate boys. To such it offers a fair remuneration, and if combined with other employments, such as every farmer's wife is required to perform, the time occupied is hardly noticed and the profits which accrue make her independent, financially. Any ambitious woman of moderately good health can make fowls pay well on the farm if she will care for them and give them the little attention they require. It requires being confined at home a little, for the fowls need to be fed regularly, especially sitting hens and those with young broods. A little neglect at this period will greatly lessen the profits. But to those who take pride in seeing them thrive under their care, the labor performed is considered only a pleasant, profitable and healthful exercise, and if husbands and brothers will unite with wives and sisters now engaged in this industry and make arrangements for more poultry houses, larger ranges, and necessary conveniences for the flocks, may not this industry be increased two-fold?

Let us at least try the experiment of giving this part of our farming more study and attention and if we fail, our loss will be proportionately less on our investment than in any other department; while, on the other hand, if we succeed our profits will be fully as great.

FARM IMPROVEMENTS.

By Charles L. Hesse, Hamlet, O.

[Read at the Farmer's Institute, held at Amelia, Clermont County, February 28 and March 1, 1898.]

Under the head of farm improvements I would include better houses, better barns, better outbuildings, better fences, better fruit culture, better drainage, better farm utensils, better stock, improved and better facilities for education, not only for the young but for the old, more comforts and less drudgery, more amusements and less labor, more christianity and less profession, and above all more sociability and less exclusiveness.

"Better houses" does not necessarily imply expensive ones, neither does it imply larger ones, but it does imply a house that is so situated as regards its sanitary conditions, as will promote the highest degree of health; it implies a house that can be comfortably furnished, lighted and heated at small expense. The kitchen is where the wife and mother spends three hundred and sixty-five days in the year, over a hot stove, and it should of necessity be the best built part of the house. The house should be provided with veranda and porches and screened from flies and bugs. It should contain a comfortable room filled with choice books and periodicals, reform literature, maps, charts etc., to which all members of the household may have free access. A certain time should each day be devoted to reading; the children should be encouraged to fill their minds with the thoughts of the best authors; labor would then become less irksome and farm life more endurable.

The intelligent farmer knows that to produce food costs both labor and money and if he would reap the reward that is justly due him, he must have barns that will keep his stock comfortable in winter; that will keep out the storms.

The people of Germany long since learned the laws of animal economy and provided themselves in many cases with barns better than many of our houses.

Do not feed your hogs in a rail pen on a ground floor; it does not pay; make them a warm pen under a good roof; give them a plank floor and a small yard to run in, and you will reap the reward. Do not let your hen house consist of a hedge tree; it does not pay. If you must have chickens, have a warm place for them, and they will be as generous as you are, and when your wife needs a new dress or a new bonnet for Easter, she will not have to ask the storekeeper to trust her till the muley cows come fresh so she can make some butter to sell.

Have a coal and wood shed; it is pleasanter to get the fuel out of a shed, than to dig it out of the snow and ice when the thermometer is about zero; it will keep you from thinking profane words; I know you would not say them.

There is nothing so pleasant in summer as well as winter as a plentiful supply of fruit; it is conducive to health; it promotes a cheerful nature; it is the natural food for men; it assists the wife in providing for the table some of the dainties that help to make up the sum and substance of living. Therefore I say do not neglect the culture of fruit; do not sell the best and keep the knotty, wormy and decayed for your own use.

I learned a lesson from an account I once read, where a woman cooked bean soup for breakfast, bean soup for dinner and bean soup for supper; her husband murdered her; I provide more than beans for my wife.

Do not forget the drainage about your house and barnyards; your pocket book demands it; doctors' bills come high; your health is very important. God gave you only one body and He demands that you take care of it; your children demand that you take care of it; disease is transmitted from generation to generation, and children yet unborn will hold you responsible for their suffering. Many untimely deaths have been the result of criminal neglect; fever and ague, croup, diphtheria, pneumonia and many other diseases are directly traceable to faulty drainage. In nearly every barnyard is a pond of stagnant and decaying slime and filth. Many green graves in the cemetery are mute evidence of neglected drainage.

In this age of progress and invention, when steam and electricity are revolutionizing the world, when man is taking control of the elements and converting them to his own use, when science is demonstrating that which formerly was mystery and wonder and proving it to be governed by the simplest laws of nature, the farmer must fall in line or forever pass into oblivion. He must, if he expects to take advantage of improved methods, provide himself with improved machinery, not necessarily the most costly kind, but such as is adapted to his circumstances.

Farmers should raise and keep better stock. I do not mean by that, that the stock they now keep is not good enough because it is not registered, but because it is not properly sheltered and fed. It is just as cheap to raise a good pig as a poor one; better shelter, better feeding and better drainage will improve the health of an animal as well as of a human being.

One of the necessary improvements upon the farm that tends to promote human happiness, that keeps peace between neighbors, that robs the lawyer and the judge of many a fat fee, that tends to promote christianity, that keeps down cuss words, that saves the farmer money, is a good substantial fence. Many a farmer has awakened in the morning to find his best cow, that cost him fifty dollars, foundered, or his mules in his neighbor's crops with damages to pay, or his pigs rooting up the garden that it took the wife all summer to plant and tend. If serene and quiet enjoyment is the goal to be attained in this world, let us by all means have better fences. They beautify the landscape and what is more they allow the farmer to utilize hi land to the best advantage and return to the soil some of the natural fertility taken away by the crops.

Education and progress must go hand in hand in a government like ours; where its stability rests upon the intelligence of the people, especially upon the farmers, there must be encouragement and inducement provided. Education must not stop with our public schools. God would not have given people brains, if he had not expected them to use them. The farmer should study political economy; he should understand the principles of government; he need not be an ox because he raises one; and he should not leave the financial question to the bankers, simply because they understand the banking business, no more than he would leave the chicken business to the foxes because they understand it.

Two hours each day should be devoted to educational purposes. The young especially should be encouraged; home should be made attractive and pleasant, and the young men would find some pleasure and delight in farming and not rush to the cities and towns as soon as they reached their majorities.

Another thing, farms should be beautified; trees set out, flowers should be planted on the lawn, gates hung on hinges, boards nailed on the barn and fences should be kept up. There is no enjoyment in living where everything looks like rack and ruin; everything should be kept in order and all about there should be the pleasant air of thrift.

In every house there should be a bath room; the bath is a civilizer, a refiner, a beautifier; when you come home from the field tired, covered with dust, nothing is so refreshing. In the cool of the evening after a day in the field, put on clean clothes, take a seat under the trees mid perfume of flowers and fruit, surrounded by your family and you will know what it is to enjoy life like a gentleman.

Farming under the conditions above named may not prove the high road to wealth but it will at least give a sense of living, of enjoyment, of happiness.

From the Atlantic to the Pacific slope there is no such country as ours, the east is hard and strong, the soil is stingy; the far west without irrigation is dry, parched, barren, dreary and desolate as perdition would be with the fires out. It is better to dig wheat and corn from the soil than gold. A few years ago I was where they wrench the precious metals from the miserly clutch of the rocks. When I saw the mountains, treeless, shrubless, flowerless, without even a spire of grass, it seemed to me that gold had the same effect upon the country that holds it, as upon the man who lives and labors only for it. It leaves the heart without a flower of kindness, without a blossom of pity.

Our country is filled with a great army of idle, and unemployed men. The great question awaiting answer is, what shall we do with them? What shall these men do? There is but one answer to the question, they must till the soil; farming must be rendered more attractive and more lucrative.

Those who work the land must make it more attractive; they must have an honest pride in their business; they must educate their children to cultivate the soil; they must make farming easier, so that their children will not hate it; so that they will not hate it themselves. Boys must be taught that tilling the ground is not a curse and almost a disgrace. They must not suppose that education is thrown away upon them unless they become ministers. merchants, lawyers, doctors or statesmen. It must be understood that education can be used to advantage upon a farm; we must get rid of the idea that a little learning unfits us for work. Education should teach us how to apply labor to the best advantage; how to become practical; how to utilize the agencies placed in our hands.

Farmers should cultivate sociability; naturally they live with their families for the most part, apart from their neighbors; they should have reunions and last but not least they should have farmers' institutes.

UTILIZING THE FARM RESOURCES.

By W. T. WILLIAMS, Radnor, O.

[Read at the Farmers' Institute held at Delaware, Delaware county, O., February 2 and 3, 1898.]

In any manufacturing establishment it is not the material composing the manufactured article that fixes the price upon it; it is the labor necessary to the finished product that makes up the great item of expense. That manufacturer who by his own ingenuity can produce an article with the least labor, is sure to have the advantage of the largest profit in the sale of his products.

Thus it is with the farmer: To a certain degree the man who can produce superior crops and raise the best stock is to be considered a successful farmer; but if he is to attain the highest success he must have the ability to properly utilize his products that they may be placed upon the market to the best advantage; otherwise, as a producer his skill will not receive proper remuneration. The farmer who by keen observation and careful experimenting has formulated a system of utilization adapted to the needs and conditions of his farm, and who holds to such a system through favorable and unfavorable seasons, will, in the end, be successful. Such a man will not be the servant but the master of his business. He will cause it to return, not only the necessities and comforts, but the luxuries of life, and will live in that free and delightful bliss to which only the farmer can attain. Satisfaction and contentment will fill his life with joy and happiness.

In my opinion, the greatest hindrance to success in the realm of soil tillers today is a lack of stability or stick-to-it-iveness. We have in recent years heard and observed not a little concerning the lack of confidence in the business and commercial sphere. As farmers, do we realize that this is the problem that often paralyzes our individual interests? It is frequently the case, when a product, through changing conditions, moves upward in price, that thousands of farmers will forsake other products, and, as it were, concentrate their whole energy upon the cultivation of the favored product. What is the very evident result of such unstable procedure? A ruinous overproduction with universally low prices. For instance, when wheat is worth one dollar per bushel, the acreage forthwith will be nearly doubled. Wheat falls immediately without the manipulation of "bulls and bears." Do farmers continue to raise a large acreage of wheat? No, they forsake it for some other favored crop; when wheat goes up again they have none to sell. Not only is this true of the cereal, but likewise of the animal product. A few years ago, through a change in our governmental policy, the rearing of sheep seemingly became an unprofitable industry. Thousands of farmers, without considering that happily the conditions would not always be such, disposed of their woolly friends for whatever they would bring. Where did they turn? To the production of pork. The result, a two hundred pound hog, that had occasioned three times as much labor to produce as had their sheep, sold for six dollars. Did they gain any advantage by the trade? They did not. But instead, many of them are today buying sheep for which they pay the price of a good porker. Does not such fickleness evince an utter lack of methodical firmness? Can we wonder that times change and prices fluctuate? We believe that systematized stability is the motive power in the successful utilization of the farm resources. By following the same plan from year to year, making only such changes as may appear necessary, the farmer educates himself and develops a greater degree of managing ability. It is an old and well proven saying that "rolling stones gather no moss." Likewise it may be verified in the farmer's line of business that it is a losing policy to rob Peter to enhance the interests of Paul. For example, a man may scrimp and starve his stock through the winter in order to have a little surplus feed to sell; in the end he will be the loser: the depreciation in the value of his stock will amount to more than the profits received from the sale of the feed. It is evident that there is among a vast number of farmers an entire lack of practical foresight. We have in mind a man whose environments and ability as a crop producer are beyond question. His raw materials in the way of cereal resources are abundant; however, instead of feeding them to stock, thus enhancing their value from twenty-five to fifty per cent., he places them upon the market as unfinished products. By such a plan he not only loses, financially in the marketing of his resources, but also deprives his land of the entire strength utilized in the production of the crops. Another farmer who may be termed a fairly successful stock producer, has formed the erroneous opinion that it pays best to dispose of his stock in an unfinished condition, having at the same time ample feed to properly fit them for market. If the man who buys such stock hopes to make a profit in their handling, why could not the producer have been likewise as fortunate?

Very frequently is it the case that farmers, instead of adapting their operations to the nature of their farm, adapt their farm to their own personal wishes. They engage in the propagation of some individual line of stock, that requires the production of a certain crop for food. They apparently do not consider whether their soil is suitable for raising such a crop, but sacrifice its conditions and character to their own desires. On every hand may be seen hundreds of acres of clay land under a severe system of cultivation, the very nature of which is rebellious to the production of cereal crops. From year to year the owners of such lands continue in the same old rut, vainly endeavoring, as it appears, to get blood out of a turnip. Their crop resources are nubbins, wheat—perhaps more often rag weeds—and timothy hay. These they utilize by feeding the nubbins to hogs, for many of them haven't a sheep on their farm and frequently but few cattle. The wheat and hay they haul to market; thus the old farm with its numerous clay knobs, gets little or nothing by way of manure to counteract the strength taken from it in the production of crops. As time goes on it continues to get thinner and thinner, and its owner may consider himself fortunate if his purse is not likewise affected.

In utilizing the resources of the farm a great many farmers evidently consider the possibility of such resources only as they apply to the line of financial profit. Apparently it does not occur to them to so manage their resources that at least a portion of their benefits may be enjoyed by themselves and families, not only as the comforts, but even the luxuries of life. We are aware that as a rule farmers have ample supplies for the sustenance of life, but how few there are who make any effort at all to procure at least a portion of what may be termed life's luxuries. At the same time there is no individual whose advantages for securing such enjoyments are equal to those of the tiller of the soil. It would be a surprising fact to many people to learn what a large variety of luscious fruit may be secured for the farmer's table with only a moderate outlay of labor. One-half acre of ground, properly set to fruit, will yield to an average family an abundance of the rarest luxuries man may desire. That prince of small fruits, the strawberry, with varieties properly arranged, lasts from three to five weeks. Scarcely have they disappeared when raspberries come to take their place. Not the seedy, withered wild ones, but great red Shaffers and plump black Greggs. In their wake follows the thrifty Early Harvest blackberry, and others of its kind will extend the berry season to ten or twelve weeks. Then there is the currant and gooseberry. Frequently we hear of extraordinary yields of two and three year-old peach, plum and pear trees. With all these fine fruits thus easily procured, is there any excuse for the farmer's table being without them? And, as is often the case, their place filled by inferior substitutes such as New Orleans molasses? Farmers, set out fruits, especially small fruits. When the harvest time comes, bear in mind that the best is none too good for the farmer and his family. Don't sell all the perfect fruit, and leave the runty, scrubby sortings for the good wife to spend time and patience in trying to get a half here and quarter there; for when she looks upon rows and rows of canned goods, she loves to behold in the glass, fruit in its unblemished perfection. Let a man provide his better half with ample provisions, and seldom, if ever, will he fail to reap his reward by way of the increased quality of his food. When we observe the small variety of provisions that are provided by some men for their wives, we cannot help thinking that if such women succeed in being good cooks, it is because they are possessed of an ingenuity equal to, or perhaps even greater, than that of Thomas Edison. It is poor practice to criticise a woman's cooking, especially before you have learned if she has anything to cook; more often you may better criticise the provider. There are women who, with the proceeds of the sale of their butter and eggs, are expected to furnish a good portion of the table fare, clothe themselves and the smaller children, and occasionally buy their husbands' tobacco. Please do not accuse me of trying to make a shoe for any one here; such women and their husbands do not attend Farmers' Institutes.

There is not only a lack on the part of many farmers in utilizing their resources for the physical enjoyment of their families, but also for their mental enjoyment and improvement. It is a sad fact that in the homes of many farmers you can scarcely find a dozen books, and frequently but one newspaper. In this age when the best books are within the reach of all, and good newspapers can be had at a nominal cost, is there any reason why the farmer should not provide the members of his family with suitable means for mentally enjoying and improving their spare moments? Even from a financial standpoint the utilization of the resources along this line will, in the end, prove to be the most profitable investment that a man can make. As a return for such provisions he will have the satisfaction of seeing his children growing up with a love for their home, having no desire to spend their evenings listening to idle tales in the corner store, or to ruin their health by late hours at the dance.

Farmers should give their children the best possible education that their resources will permit. Give your boys and girls a high school education at least. In the years to come they will appreciate it more than ten times its cost in acres of land. Less land and more learning should be the future inheritance of the farmers' children. The man who in this age of advancement does not give his child the privilege of an education superior to what he himself possesses, is not doing his duty by that child; in the ruling of future events such a child will, through a lack of proper preparation, be placed at a disadvantage. Rarely can he hope to reach the top round of financial success, even in the calling of a farmer.

The utilization of the farm resources presents a subject of broad and vital importance. Easily we might spend all the sessions of this institute discussing its characteristic variations; but that is not possible, neither would it be practical policy. Necessarily, a young farmer I have had to choose a large portion of the thoughts embodying this weak effort from the field of observation rather than from the fountain of personal experience. In conclusion I would reiterate, that in my opinion the most successful utilizer is the farmer who steadily follows an established plan, causing his land not alone to yield profits from a financial point of view, but also to return for himself and family the comforts and luxuries of life, providing for his children an education that will fit them, not only to meet and conquer life's trials and battles, but in addition enable them to take rank with the sons and daughters of people in other and all callings of life. Therefore let us utilize our resources for our enjoyment and happiness, and the advancement of those around us, remembering that we brought nothing into this world, and it is certain we can take nothing out, and that the chief end of man is to glorify God and enjoy Him forever.

MANURE SHEDS. DO THEY PAY?

By H. A. HALVERSTADT, Leetonia, O.

[Read at the Farmers' Institute held at Leetonia, Columbiana County, Dec. 10-11, 1897.]

If some one had talked of building manure sheds in the first half of the nineteenth century, his neighbors would probably have thought him a fit subject for an insane asylum or an asylum for the feeble minded. Their astonishment would likely have caused them to comment about as follows: "That idiot of a neighbor has been building barns and stables for his stock, until everything thing he owns, from his horse down to his fowls, is stabled and sheltered from the inclement weather, as though his very life depended on it; while we thought the trees were the natural roosting places for our chickens, and that our cattle got strong and hardy by standing at the straw-stack in zero weather; nor do we believe in working during the winter, putting our stock in and out of the stable every day, even if we had a stable, while this tenderfoot now talks of sheltering his manure, just as though it too was likely to get cold and chilled unless kept in out of the wet. What is manure good for anyhow, until it is rotten, and the longer it lies around the less there will be to haul." Somehow or other, some *one* conceived the idea of building a manure shed, and had the courage to carry his idea into execution, and I firmly believe, future generations, in their appreciation of what he has done, "will rise up and call him blessed." Indeed I was a little surprised, that even Noah Webster had never probably heard of this modern adjunct to the farmer's barn. In my search for a proper definition, I naturally turned to the "Unabridged," but failed to find the *term*, so I shall be compelled to coin one for this *paper*, and will be magnanimous enough to allow all of you to freely use it without fear of infringing on some body's "patent." My observation and experience have taught me, that a manure shed, is a building erected, generally contiguous to the farm barn, for the purpose of preventing loss of plant food by leaching, or as is sometimes the case, when thrown on a heap, by burning or fire-fanging of the manure; and at the same time furnishing shelter for the cattle during the cold of winter, and in the heat of summer, usually built two stories high, the upper story to be used during the winter as a storage place for straw and in the summer to shelter machinery when not in use.

Having said this much about the first part of my subject, I will now turn to the second part.

Do they pay? This is the most natural question for anyone to ask. Indeed it is the question that is continually being asked by those who contemplate the outlay of hard earned cash. The company at the west end of town, that is making such extensive improvements and additions to their "*iron plant*," have no doubt well and thoroughly considered the cost, and decided that in the end they would be the gainers, though the expense was great. The farmer who spends his money for tile and buries them beneath the soil expects to be able to raise better crops, and sow and reap with more comfort and ease to himself and team; in short, he anticipates the return of his money with interest. Mr. Mills, the millioniare, when he built the great hotel in New York, with the view of furnishing cheaper board and lodging than could be obtained at any other large hotel, was not wholly unselfish, for he expected to make the enterprise pay though he furnished a good meal for fifteen cents.

Moreover the "*Book* of books" tells us to "*consider* the *cost*." Nor would I have anyone rush in to build something so useful as a manure shed without first considering his ability to complete and maintain it, and then use it so as to get the most good from it. I do not believe in going it *blind*, as I fear many farmers do at times, and as I am told we *must* do when joining secret societies. For my part I always like to *see* my way *out*.

I have known farmers who could be induced to buy almost anything, if only some interesting, smooth-tongued individual would come around and tell them they needed it, and that *he* (the agent) belonged to the same church, or fraternity, or something else, that made him especially solicitous for the farmers' welfare.

A person need not travel very far from home in any direction, if he is observant, until he can see farm machinery standing out in the field, probably where it was last used, barn doors off the hinges, glass all out of the windows, corn fodder out in the field and the barn full of emptiness. To this class of farmers a manure shed would do little good. It seems to be a rule of almost universal application, that the things of which I have just spoken are true of those farmers who do not have the *time* to attend these Institutes, and cannot *afford* to take a *farm paper.* But to return to the manure shed.

Some will urge that they are already in debt and cannot afford it, and in some cases this may be true, yet if you could save twenty dollars by paying out fifteen dollars, you surely would consider it a reasonably good investment, provided you did not have to wait too long for the return. It has often been observed that sheep manure that has remained in the stable all winter with the sheep tramping on it every day and constantly adding thereto, when hauled on the wheat ground the following autumn, gave double the return that the outdoor barnyard manure did, in the crop to which it was applied, and that the increased fertility was noticeable for four or five years after the application. Those who have manure sheds and keep all the manure in the dry during the summer that is to be used on the wheat crop, have learned that this difference no longer exists. I have applied side by side, manure from the shed with that from the sheep barn, and the result is alike good, and far superior to the benefit derived from an application of commercial fertilizers. I presume the difference formerly went on its way down toward the Ohio river and for aught I know some may have gotten to the Gulf and finally have found its way to the shores of old England, via the Gulf stream. You know that England is a remarkably productive country, and we Americans would not mind being held responsible for at least a part of it, even though it was fertile long before America was discovered. Be that as it may, I have decided to keep as much fertility as is possible on my own farm.

To those contemplating erecting a new barn, or even remodeling an old one, the additional expense of a manure shed need not be great. If attached to the barn, as is generally done, the additional siding will be only that on two sides and a gable end from the square up.

Most farmers in this part of the state still have some woodland, and all the cost to them for frame timber would be the bill for sawing, and many farms could furnish the siding also, which would leave no large outlay, but for the roof; so that I am sure, where a farmer has the necessary timber on his own farm, a shed large enough (and two stories high) for a hundred-acre farm can be built, with slate roof and good wall, at a money outlay not to exceed two hundred dollars. The interest on the money and the insurance on the building would be, probably, fifteen dollars annually, and the gain in increased fertility to the farm should not be less than forty dollars each year, to say nothing of the use of the upper part of the shed as a storage room, as the comfort to the cattle, as well as to the farmer. If my figures are not too high for the additional fertility, and I am sure they are not, the shed would pay for itself in less than ten years, and it should last forty years without any paint, if poplar siding were used. Some one may wonder how I place so high a value on something that is so little cared for by the average farmer, and how I manage to retain this additional value.

A shed should be enclosed and the cattle allowed to lie in it after night and stormy days, from the first of October till the pasture is large enough to turn upon in the spring, generally about the fifth of May, instead of lying and standing along lanes and in muddy barnyards, as used to be customary, and, I am sad to say, is still practiced by so many.

During the hottest days of summer my cattle, at least the milch cows, have access to the shade afforded bv the shed. By the cattle being in the shed so large a part of the time, the manure is constantly made better and more valuable by the addition of liquid manure, which would nearly all be lost but for the *shed*.

It is true that a great many farmers are hauling their manure direct from the stable to the field, and thereby saving some fertility that would otherwise be lost, but they are often compelled by this method to haul on fields when so soft as to do a great deal of damage.

I shall now try to answer some of the objections that have been raised to the manure shed.

First, that the manure would become so dry that there would be loss by fire-fanging. With proper care there would be very little danger of this. Where horses and cattle are kept, and this applies to almost every farm, the manure should be mixed in the shed by drawing from the stables and spreading over all parts of the shed, instead of throwing the horse manure in one part and the cow manure in another, which practice would not give satisfaction even in the old way.

Then some have said that keeping the cattle on the manure all the time would make it so hard and compact that it could scarcely be loosened with pick and shovel; this is a great mistake.

I try to keep my shed well littered at all times, for two or three reasons. 1st. To obviate the objection just mentioned. 2d. To keep the cattle clean, and, 3d, to use up all the straw possible, because I find I can have my cattle tramp my straw into manure more cheaply and economically than I can haul it four miles to town and get manure in return. Bedding very liberally after hauling out the manure, which I do about three times a year, answers almost the purpose of a cement floor, and comes much cheaper. The objection of too close confinement has also been raised, and this might become a serious one if the shed was too small or the number of cattle too large. Without any ventilation and constant confinement, their health might become affected, but there must be less danger of this than where cows are chained or stanchioned in their stalls almost all winter without any chance to exercise; watered and fed in this one spot all the time, as is practiced by some of our dairymen. I should oppose this practice, just as I should a family living all the time in *one* room. Cattle and other stock should have a change of location and a sniff of fresh air at least once a day, unless the mercury got very low indeed. When cattle have become accustomed to the warm genial atmosphere of a good shed, I assure you they will not stay out long on a cold day, though the door be left open for them to go to water.

I shall now sum up by saying that a manure shed does pay, in an increased amount of plant food saved, in convenience in sheltering the cattle, in providing a suitable place to mow away the straw at threshing time, in larger returns from the dairy by keeping the cows comfortable at all times, and in various other ways, which I shall not take time to mention.

If I have said anything that will cause one of my fellow farmers to *consider* the advisability of *constructing*, and lead him to *investigate* the *merits* of this essential *building*, then I shall feel amply remunerated for the time spent in preparing this paper.

OUR FORESTS.

By J. B. JOHNSTON, Newtown, Ohio.

[Read at the Farmers' Institute held at Newtown, Hamilton County, February 9 and 10, 1898.]

The United States Department of Agriculture has compiled statistics which show that the forest area of this country, exclusive of Alaska, is five hundred million acres. Seven-tenths of this is found on the Atlantic side of the continent, one-tenth on the Pacific side, one-tenth on the Rocky mountains and the remainder is scattered.

The value of the timber yearly consumed in the construction of houses, ships, railway cars and tracks, and as fuel was, in 1890, one hundred million dollars, a sum that equals the value of our crops of wheat, oats, barley, rye, potatoes, cottón and tobacco taken together, and is ten times as great as the combined product of our gold and silver mines. It is estimated by some mathematical genius, that we consumed last year of sawed timber alone thirty billion square feet, enough to load a train of cars twenty-five thousand miles long, just long enough to go around the earth at the equator. If to this we add the railway ties, telegraph poles and posts for fences, our train would be seventy-two thousand miles long, and if we add the wood cut for fuel, mining purposes, etc., it would be two hundred and eighty-eight thousand miles long, or enough to reach from the earth to the moon, with enough left to go around the earth twice. The weight of these forest products would be enough to load five hundred thousand ships of one thousand tons each.

The vast amount of material of various kinds taken from our forests is a convincing proof of their value. It needs but a hasty observation to see how many industries they sustain and how many comforts and conveniences they provide for all. A toothpick is a little thing, the merest sliver of wood, yet it is reported that one factory uses ten thousand cords of wood annually, in the production of these splinters. Shoe pegs are small affairs, yet a single factory sends forty thousand bushels of them to Europe yearly, besides what it disposes of at home. A spool is of small account when it is emptied of thread, yet there are several factories which use from eighteen hundred to thirty-five hundred cords of wood every year in making spools, and, in one factory, one hundred and fifty men are employed in making them. Thousands of acres of birch have been bought at one time by our thread companies for the sole purpose of securing a supply of spools. Who thinks much of the little match as he uses it then throws it away. But a single factory, makes sixty million of these every day.

Besides the timber used commercially, every year large amounts are destroyed by careless woodmen and by forest fires; at the present rate our forests will be consumed in ten years. But the forests are of even greater importance to us on account of their relations to climate and health, to the flow of the streams and to the great interest of agriculture. Scientists tell us that trees and plants consume the noxious gases exhaled by animal life and exhale oxygen, thus purifying the air.

Soil, moisture and heat are the three factors, which combine to produce the farmer's crops. In some directions he can control these factors more or less readily. He can maintain the fertility of the soil, he can remove surplus water by ditching and draining and, by timely cultivation, he can prevent excessive evaporation; but he can not by direct means control the rainfall nor the temperature. By indirect means the farmer can prevent or reduce the unfavorable effects of changes in the temperature; he can increase the available water supplies and prevent the evil effects of excessive rainfall; but this can not be done without the forests. Extended open fields and plains have a tendency to prevent condensation of the passing, moisture bearing currents. By careful experiments made both in Europe and America, it has been found that the air over a forest is cooler and contains more moisture than the air over a plain. This tends to condense the moisture of passing clouds, so that local showers become more frequent in their neighborhood.

But if no increase in the amount of rainfall were secured by forests, the availability of whatever falls is increased. The foliage and branches break the fall of the raindrops and so does the litter on the forest floor, and for this reason the soil in the forest is not compacted as in the open field, but is loose and mellow.

The rain dropping from leaf to leaf reaches the ground more slowly, has more time to soak in, and sinks farther into the soil. The millions of small roots of a forest penetrate the stiffest clay. The rain drops trickling along these find their way deep into the ground, to come to the surface again in the form of cool springs of refreshing water. The two great moisture dissipating forces are wind and sun, and because of the cool, still air of the forest the evaporation is greatly lessened. Snow remains a month longer in the deep forest than on the open plain. The available supply of water is thus increased from 50 to 60 per cent.

This holding of the water by the forests, to be given off slowly, prevents floods to a great extent. It has been man's unvarying experience that the clearing of large forest areas is followed by destructive floods.

Trees break the wind and temper both the winter's cold and summer's heat. Kansas farmers testify that fields protected by even a single row of high trees usually yield full crops, while crops in wind swept fields frequently winter kill, and rarely yield more than two-thirds as much as if protected. A stiff breeze which dries up the roads in a day, also dries up the fields.

That stock thrives better where it can find protection from cold and heat, is a well established fact. The custom of having trees, single and in clumps, around every field is one to be encouraged. I like that German custom of planting fruit and forest trees along every highway, lane and line fence, thus refreshing the bodies of passers by, as well as delighting their eyes. I am informed that there is a law in Germany requiring him who destroys a tree to plant two in its stead.

My most pleasant recollection of the corn plowing days of my youth is the distinct one of the cool, refreshing shade at the end of the row. I believe my boyish gratitude to the giver of all good for that shade, was worth much more than a few extra bushels of corn.

Does any one doubt the important influence of forests upon a country, he has but to refer to history and his doubts will all be swept away. Spain, under the reign of the Moors, resembled a vast garden, yielding grain and fruit, in every known variety, of the most perfect quality and in endless abundance. But the luxuriant growth of timber which covered the sierras and dotted the plains was destroyed under the rule of the kings, and now one-half of its area is like a desert and unfit for cultivation, while its once delightful climate is changeable and rough, as are its people. Sicily, once the great grain supplier of the world, despoiled of its forests, gradually lost its fertility and the mildness of its climate, and the ruins of the once proud Syracuse now lie in a desert covered by sand, which the hot siroccos bring over from Africa. Greece and Italy, homes of those ancient heroes who covered their countries' surface with gardens, parks and villas, and sent forth great armies to conquer the world, are but shadows of their former glory. Palestine, the promised land of old, which in the time of Joshua flowed with milk and honey, is now an arid desert, yielding a scanty living to a miserable and thriftless population. Where in Africa or Asia could now be supported the great peoples which formed the Empires of Assyria, Persia and Egypt? We must sustain and increase our forests or we shall surely share the same fate.

A great deal has been done through Arbor Day celebrations, but more can yet be done. Every farmer cannot plant a forest, but he can cover all waste land and plant trees around his house and barns. A double row of trees around every farm will not be detrimental to the soil but will be worth more than their cost as shelter from the wind. Every village street should have a double row of trees on each side, maple, hickory, walnut and fruit trees.

For forest purposes from three hundred to twelve hundred can be planted on an acre. The state should encourage tree planting by exempting from taxation a certain sum for every acre planted. Michigan has a law requiring each road supervisor to compel the planting of fifty trees in his district each year till it is amply provided for, and allowing for each tree so planted twenty-five cents on the road tax of the one planting it, provided this allowance does not exceed one-fourth of his entire tax. The trees are to be not more than sixty feet apart, nor more than twenty-five feet from the center of the road. Connecticut, Dakota, Wyoming, Kansas and Nevada, exempt amounts varying from ten to one hundred dollars per acre, for periods varying from five to twenty years. We may as well make a virtue of necessity and follow in their footsteps, and if we are to continue to be a great nation, it is a necessity.

The tree of the field is man's life, says the inspired law-giver of the Hebrews. In this short sentence is condensed all that trees do for us. Without them we could not live.

He who exhausts the soil curses posterity, and he who unnecessarily destroys a single tree does his part toward making the earth a desert. How intimately trees are connected with our lives, from infancy to old age; under the trees children play, lovers meet and old age rests. Trees have about them something beautiful and attractive, and since they cannot change they become historical monuments.

> "The groves were God's first temples, ere man learned
> To hew the shaft and lay the architrave
> And spread the roof above them, ere he framed
> The lofty vault, to gather and roll back
> The sound of anthems, in the darkling wood
> Amidst cool silence he knelt down
> And offered to the Mightiest solemn thanks."

RURAL AND VILLAGE SANITATION.

By PRESIDENT J. M. DAVIS, of Rio Grande College, Rio Grande, O.

[Read at the Farmers' Institute, held at Rio Grande, Gallia County, Dec. 20 and 21, 1897.

The first thing for us to do in this discussion is to get a clear notion of the meaning of the word sanitation.

Sanitary science is that branch of science that treats of special measures for the preservation of health and the prevention of disease.

Sanitation is the devising and applying of measures for preserving and promoting public health; the removal or neutralization of elements injurious to health; in brief, sanitation is the application of sanitary science.

Before treating particularly of my subject, it may help to set it in clear light before our minds to mention briefly the subject of *city* sanitation as opposed to *rural* and *village* sanitation.

In cities, the causes of public ill health are massed together on such a vast scale as to increase and aggravate the evils and dangers. This permits the connection of cause and effect to be seen more clearly in cities than in villages and rural places. Consequently the application of sanitary science to the sanitation of cities is in a more advanced stage. This applies to the construction of buildings, to the furnishing and removing of water, to sewerage, street cleaning, etc. It will be of great interest for any one to study the construction of a modern city house with approved sanitary arrangements, as given in detail by both text and illustration in the Standard Dictionary.

The supply of water enters from a street main by a pipe under control of a stop and waste cock. Cold water pipes convey water to a boiler in the building, from which it passes to the hot water pipes throughout the house. A full supply of water, both hot and cold, is sent to sinks, washtubs and bathtubs. Over each water-closet seat is a flushing box operated by a valve cord. All of the receptacles mentioned empty into waste pipes, whose contents are conveyed to a soil pipe. Both waste pipe and soil pipe are ventilated as well as flushed with water, and the ventilating tube passes into the open air above the building, while the contents of the soil pipe are promptly and completely emptied into a street sewer. A system of traps prevents the escape of any vapor, whatever, into the building, and the flushing prevents the accumulation or the stopping of dirty water, night-soil, or *anything*, in any part of the system.

The improved system of street cleaning, which Colonel George E. Waring has put into successful operation in New York city, will give him an honorable place in history, when thousands of pretentious political meddlers and selfseekers have been consigned to oblivion. The unspeakable value of sanitation is shown in the fact that since the inauguration of Colonel Waring's work, the annual death rate in New York city has fallen four or five to the thousand. This simply proves that avoidable filth has been, and is, destroying life by the ten thousand in our country annually. The fact that Colonel Waring has made the children an intelligent part of his cleaning force, will tell upon the cleanliness and healthfulness of New York city in the next generation.

The fact that an intelligent and refined lady is now connected with the street cleaning service of Chicago, is a fact of good omen. The improved sanitation of our cities and villages and rural homes is an appropriate object of womanly interest and activity.

Now as to rural sanitation. The healthfulness of a rural district is sometimes injured by the stoppage or defilement of a watercourse, by leaving a marsh undrained, by leaving the back water of a rainy season and high streams in low places where it slowly evaporates. In all such cases, the applying of sanitary science is as simple as the applying of medical science to the case of the young lady who said to her physician :—" Doctor, what shall I do? Whenever I bend my head away down to one side, *this way*, I get dizzy " "My dear girl," said the doctor, "just quit bending your head away down to one side, *that way*." In like manner, I would say, keep all the natural water channels open and unobstructed. In dry weather when the streams are low, permit no filthy matter to be thrown into them or to flow into them. The people of Gallipolis ought not to have waited until a health officer from Columbus came and condemned the opening of the main sewer from the Ohio Hospital for Epileptics, into the small stream that runs circuitously through the eastern end of that city to the Ohio river. Drain the marshes; and, when back water from swollen streams is left in low places, open channels for it to get out. When animals die and when butchering is done, bury the bodies and the offal, instead of leaving them upon the ground to taint the air of a whole neighborhood. Remember that there are hurtful exhalations from such sources that cannot be detected by smelling.

A few years ago a stream running through a field at the rear of a row of village lots was obstructed by a growth of willows and accumulated detritus from the hill farms above. Its bank was lined by stables, pigsties, and privies. It is nauseating to think of what was to be found in that vile place. Typhoid fever was caused that ravaged the village and surrounding region for two years. The seven deaths that resulted are but a small part of the baleful result. The expense of treating those who recovered, their debility and incurable weakness, the agony and apprehension of the sick and their kindred, and the bad repute of the locality, must all be taken into consideration. Not far from this place, not long since, a stream was obstructed by the slabs and sawdust made by a sawmill set temporarily on its bank. This accumulation evidently caught germs from typhoid fever patients farther up the stream. After a while a freshet washed out the mass and spread it down the valley. All along the deadly track there was typhoid fever. A number died. Father and son followed each other from the same house to the grave in quick succession.

One of the leading papers of our country in its issue of last week has an article entitled, "Yellow Fever a National Disgrace." The writer says that, although the germs of this disease are imported from such filthy places outside of our country as Havana, Rio de Janeiro, Colon, and Panama, where it thrives all the time, yet these germs would be harmless in our country if they did not find here their sustenance in heat, moisture and filth. Heat and moisture are produced by nature, filth is produced by man. The writer says: "If the water supply, the sewerage, the milk supply and personal cleanliness in the cities, towns and villages in the Gulf states were satisfactory, we might view with contempt and indifference the ravages of the fever in Cuba." Europe has banished yellow fever from her shores, not by quarantine but by sanitation.

If yellow fever is a national disgrace, shall we not say that typhoid fever is a local disgrace wherever it exists? And, if I should here assert that in the last six months more persons have died from typhoid fever in Jackson and Gallia counties than have died from yellow fever in any equal population in the United States in the same time, and you should deny my assertion, I could at once marshal facts that would make it very hard for you to stand by your denial. Yet the ravages of yellow fever in our country have produced national alarm during the last hot season, while seven deaths from typhoid fever in one week, in one small county, being reported in the local papers, have produced almost no sensation.

When we come to more particular matters about the farmer's premises, there are several points of interest. Clean cellars, pure water in wells and cisterns, a proper attention to sties, privies and stables, are matters that as soon as mentioned suggest the appropriate measures to all intelligent people.

As far as privies are concerned, this is my view:—Have no vaults, but regularly throw sand and lime under the seats, and at intervals not far apart remove everything to the fields and throw lime and copperas water upon the ground under the seats.

As to sties, do not confine hogs for fattening in sties where they are compelled to eat and sleep in the filth. It has been scientifically demonstrated that foreign matter is absorbed by the skins of the animals. The flesh of such animals is not pure and wholesome.

As to milk, not only should the cows be healthy, but they should also be stabled with scrupulous regard to cleanliness, for they absorb material through the skin that defiles the milk.

A few years ago the officers in Boston, who test the milk sold in the city, plainly detected impurity in the milk sent in from a dairy in an interior town. A man was sent to inspect conditions. He found that the only thing wrong was that the stalls of the cow stable were not kept clean. As soon as this fault was remedied, the milk stood the test for purity.

When I mention the evil of throwing leaves and rinds and crumbs into the back yard, and of repeatedly throwing dirty and greasy water upon porous soil where it is taken up to come reeking back in foul exhalations when the sun shines hot, I shall be done with the filth of the country and shall retire to the filth of the village—where I feel more at home.

And yet it will not be necessary to speak at greater length than I have in regard to the country, for many things said in regard to rural sanitation apply strictly to village sanitation.

The great trouble with our villages is that our people do not realize how important a subject this is. Many of them have moved in from the farm where the wide room they had for all things has given wind and water a chance to undo a large part of the evil that would otherwise have resulted from their careless methods. But here they crowd upon a little lot the things that in the country would be scattered over great spaces; matter that would regularly be spread out over the farm, accumulates upon this contracted space.

Go through the streets and alleys of many a village on a quiet summer evening, sniffing inquiringly as you go; and if your nostrils are not insulted, it is because they have endured so many insults of that kind without resentment that they have become too good-natured to be capable of further offense.

Make a journey along the back end of some of the lots, where rag weeds and burdock, and their like, flourish in a fertile soil that has been enriched by almost every thing that will rot, and have been encouraged in their monstrous growth by regular irrigations of dish water and soap suds, underneath whose leaves potato parings and green corn cobs and radish tops and pea hulls and rubber shoes and the feathers and heads and feet of butchered chickens, and the whole carcasses of chickens that have reached an untimely death by pip or cholera, are gently and fragrantly decaying,—take such a journey as this, I say, and I am sure you will say that village sanitation is not an impertinent or unimportant subject.

All that has been said about cellars, wells, cisterns, privies, sties, stables, etc., when discussing rural sanitation applies here, and applies with added force on account of the more unfavorable situation. Precautions against allowing surface water to get into wells is especially necessary.

At regular periods every square foot of village property should be inspected and thoroughly cleaned. In summer, weeds and grass should be kept down everywhere. After every rain it should be seen that nothing that hinders the light and air from reaching every accessible place should be permitted to accumulate.

The first year after the town of Athens had a public water supply, there was an increase of sickness and mortality. Competent authorities said this was due to the fact that the liberal watering of the premises caused a rank growth of grass and weeds in corners, alleys and back yards and other neglected places, and that this retarded evaporation and held decaying matter in the process of decay.

I have said enough, I trust, to prove the importance of my subject and to make it practically suggestive. Without going to any extreme of censure, it is enough to say, as a matter of judgment upon the facts in the case, that rural and village sanitation is capable of improvement. This being so, let us see to it that the needed improvement is made.

When another year has rolled around, among all the other items of advancement in our condition, let us find our streams and farms, our houses, yards, barns and enclosures, so cared for that more tasteful appearance shall be accompanied by purer air, and greater vitality and comfort. In all our villages let improved streets, and handsomer buildings and front yards, be accompanied by all conditions that improve the decency and convenience of our lives and augment the vigor of our bodies, the clearness of our minds, and the purity of our hearts. Let every occupant of a rural or village home make its sanitation a matter of more thorough study and more energetic effort than ever before.

I should be glad to close by speaking only of our duty to our own premises, but justice to my subject forbids me to do so.

We must briefly consider what are our rights and duties when any of our neighbors neglect or refuse to do theirs, and thus offend and injure those around them.

It will be well to note what the Statutes of Ohio define as nuisances and what provision they make for their forcible removal.

"Sec. 6921. Whoever erects, continues, uses, or maintains, any building, structure or place for the exercise of any trade, employment, or business, or for the keeping or feeding of any animal, which, by occasioning noxious exhalations, or noisome or offensive smells, becomes injurious to the health, comfort, or property of individuals, or the public, or causes or suffers any offal, filth, or noisome substance, to be collected, or to remain, in any place, to the damage or prejudice of others or the public, * * * or corrupts, or renders unwholesome or impure, any water-course, stream, or water, * * * shall be fined not more than five hundred dollars."

"Sec. 6923. Whosoever puts the carcass of any dead animal, or the offal from any slaughter-house, or butcher's establishment, packing house, or fish-house, or any spoiled meat, or spoiled fish, or any putrid substance, or the contents of any privy vaults, upon or into any lake, river, bay, creek, pond, canal, road, street, alley, lot, field, meadow, public ground, market space, or common, and whoever being the owner or occupant of any such place, knowingly permits any such thing to remain therein, to the annoyance of any of the citizens of this state, neglects or refuses to remove or abate the nuisance occasioned thereby, within twenty-four hours after knowledge of the existence of such nuisance upon any of the above described premises, owned or occupied by him, or after notice thereof in writing. from any supervisor, constable, trustee or health officer of any municipal corporation or township in which such nuisance exists, * * * shall be fined not more than fifty dollars nor less than ten dollars."

I have given above what the laws of our state contain for the protection of ourselves and our families. And yet there is not only great ignorance but great timidity and delicacy in regard to using this legal protection. I have known families to shrink from unpleasantness with a neighboring family, and as a consequence, to spend whole months in which it was impossible to get one breath of pure air except when the wind set hard toward the offending property. It was not right to suffer such wrong. The one who was well felt himself debilitated and depressed, the helpless invalid dreaded to see the window opened, for it gave ingress, not to God's pure air, but to man's vile pollutions of it.

I will state what I think should be done in such cases. There should first be a certainty that we ourselves are not in fault. Then the existence of the nuisance on the property owned or occupied by another should be kindly but plainly pointed out with an explicit demand for its immediate abatement or removal. If this should not produce the desired result, the proper officer should be required to present the written notice demanded by the law. If in the statutory twenty-four hours the nuisance should not be abated or removed, the offender should be prosecuted. Comfort, health and life, are too precious to be jeopardized for fear of offending those who are too ignorant or too perverse to refrain from such cruel injustice to others.

Such considerate and reasonable yet firm conduct as I have recommended would receive the approval of all good and sensible members of the community. One such case would be a lesson that would render a dozen other possible cases unnecessary. This matter of sanitation is too vital to be neglected. There are facts that we ought to know; there are duties that we ought to do; there are rights that we ought to maintain.

FAIRS.

By MRS. MARY E. DAVY ANDERSON, Huron, O.

[Read at the Farmers' Institute, held at Castalia, Erie County, January 17 and 18, 1898.]

The term "fair" had its origin from the French *foire*, meaning market place. Fairs were originally market places and were held periodically. They were common in Europe and Asia, and so noted in some places that they attracted people from various parts of the world.

The most noted of these fairs, and it is said the largest in the world, is held at Nijni Novgorod, a commercial city in the east of Russia; it begins July 15th, and continues two months. This fair is of great importance in the way of trade. The value of the goods sold in 1697 was fourteen thousand pounds; in 1863, sixteen million seven hundred and sixty thousand pounds; and in 1889, eighteen million four hundred thousand pounds.

Another important fair was at Leipsic, Saxony, where they had three annually; at Easter, Michaelmas and New Year. Trades to the amount of ten million pounds often took place at Easter.

The fairs at Greenwich, Glasgow and Donnybrook were noted for their boisterous merriment, where, to draw crowds of people, they had foot ball, wrestling, yawning, cudgel playing, throwing at cocks, sack races, flying dragons, grinning through horse collars, soaped pigs, tub races, eating hot hasty pudding, wheelbarrow races, etc.

Fairs for the exchange of goods have never found a place in America. Not until a greater interest was taken in agriculture, schools had been founded and experiment farms organized, did the county fair make its appearance to still further encourage progress among farmers.

The first agricultural school of the world was founded by Fellenburg at Hofwyl, Switzerland, in 1806. His pupils were taken from the poorest class of peasantry of whom he said that—"Having no other property than their physical and mental qualities, they should be taught how to use this capital to the best advantage by a combination of disciplined study and manual labor." Three thousand pupils were trained in this school which flourished for thirty years.

Agriculture in ancient times was thought to be the most honorable of vocations. Cato, the first and most celebrated writer on the subject, died at the age of eighty-eight years, 150 B. C.

Associations for the promotion of agriculture were formed in the north of Italy in the beginning of the last century, and one was formed in the north of Scotland in 1723. The Highland Society was founded in 1783, and was incorporated by royal charter in 1797. This society was of great value to the people. In 1799 it began to publish its transactions and prize essays. The objects aimed at by this society were:

First—Agricultural meetings and shows of stock, implements and dairy products held in the principal towns.

Second—To encourage improvement in the breeds of stock, a proper agricultural education, the advancement of the veterinary art and the appointment of a chemist for analyzing soils, manures, etc.

Third—To establish an agricultural union for monthly meetings during the winter to discuss agricultural subjects, and the periodical publication of prize essays and reports on all branches of agriculture.

America profited by the experience of her neighbors across the water, and in 1785 the first agricultural society at Philadelphia was founded by a body of citizens, only a few of whom were farmers. This society met regularly for a number of years. Premiums were offered for the elucidation of important subjects, such as the adoption of improved methods of European culture, domestic manufactures, etc. Mr. Matthewson, of Rhode Island, in 1790, received a gold medal for the best sample and greatest quantity of cheese.

The first agricultural association to institute a farm for experiments, to import and distribute foreign products suitable to the climate, to assist the farmers to improve their methods, and to reward those who should improve the art of industry, was incorporated in South Carolina in 1785.

In 1810, Mr. Elkanah Watson, of Berkshire, Massachusetts, wrote an appeal to the public, which he induced twenty-six farmers to sign, appointing a cattle show at Pittsfield, on October 1st, of that year. It took place, and it is believed, was the first agricultural fair ever held in America. This society was incorporated in the winter of 1810–11. From this sprang the system of agricultural societies and shows that we have in most parts of the United States today.

On February 22, 1819, an agricultural society was organized in Ohio, called "The Agricultural and Manufacturing Society of Washington county, Ohio, and Wood county, Virginia." A county fair was held at Marietta in 1826. In those days the court house served for floral hall, and the street or vacant lots adjacent were used to display the stock.

"The Cincinnati Society for the Promotion of Agriculture, Manufactures, and Domestic Economy" was organized in Cincinnati early in 1819, with General William Henry Harrison as president. A little later this society was reorganized under the title of "The Hamilton County Agricultural Society," with General Harrison as president. At the first fair held by this society early in the "twenties" (the exact date cannot now be given) no cash premium exceeding five dollars was offered, while diplomas and certificates were the general inducement for the exhibition of stock.

The first agricultural society in New York was formed May 5, 1832, when the legislature passed an act appropriating eight thousand dollars for five years, to be divided among the agricultural societies. Not much was accomplished by this society until after the importation of several million dollars worth of breadstuffs in 1837–8 aroused some of the active, energetic men of the state to see the condition of things, and they set themselves to work to institute a reform which should promote the welfare of the people of America. Hon. Henry L. Ellsworth originated a plan in 1839 by which an annual appropriation was made by congress for the collection of agricultural statistics, investigations for promoting agricultural and rural economy, and the procurement of cuttings and seeds for gratuitous distribution among the farmers, to be expended under the direction of the Patent Office.

The first agricultural college farm was chartered in New York in 1854 by the legislature, and located at Havana, Schuyler county.

The first law leading to the organization of agricultural societies in Ohio, and the holding of annual agricultural meetings in the various counties, was enacted by the general assembly February 25, 1832. February 27, 1846, this law was repealed and a new law passed similar in outline to the one under which county societies organize and operate at the present time, requiring the annual offering of premiums, reports to the State Board of Agriculture, the holding of a state agricultural convention, etc. This law created a state board of agriculture, consisting of fifty-three members. On the 8th of February, 1847, the law was so amended as to make the number of members ten, and it also provided for an appropriation of two hundred dollars from the state treasury to the board.

The Ohio State Board of Agriculture held the first State Fair at Cincinnati in 1850, and it has held an annual fair since that time, except in 1888, when the Ohio Centennial was held. Until 1874 it was a "movable" fair, having been held five years at Dayton, four years each at Cleveland and Columbus, two years each at Cincinnati, Toledo, Springfield and Mansfield, and one year each at Sandusky, Newark and Zanesville. It was then located at Columbus, occupying the grounds of the Franklin County Agricultural Society until 1886, when it was permanently located on its own beautiful grounds, with capacious buildings, at Columbus.

We have reason to be proud of our State Fair; its entire freedom from all objectionable features, and the efforts made by the board and its officers to make it purely educational, should commend it to every man and woman in the state. A prominent gentleman remarked at one of our late Institutes, that "the State Fair at Columbus was as pure as any church festival; that no woman or child need have any fear in attending it, as there was nothing to shock or displease."

Under the law passed in 1846, agricultural societies were organized and fairs were held in many of the counties of the state, viz.: Clark and Madison, jointly, at Springfield; Columbiana, Fayette, Gallia, Geauga, Lorain, Madison, Trumbull and Washington.

The Columbiana County Agricultural Society was the first organized under the new law, and the Lorain County Society held the first fair after the passage of the new act.

Prior to this time Huron county, embracing the territory now included in Erie county, met and organized the Huron County Agricultural Society, June, 1833, under the act passed February 25, 1832. The first fair was held in 1838 at Norwalk, and the amount paid in premiums was seventy dollars. These fairs were held jointly at Norwalk, Milan and Monroeville until 1852, when a separation was made between the two counties. There was five hundred and eleven dollars and ten cents in the treasury, giving Huron county two hundred and ninety-nine dollars and six cents, and Erie county two hundred and twelve dollars and four cents. In the same year the Erie county people met at Huron to organize the Erie County Agricultural Society. One of the resolutions offered at the meeting expressed approval of the action of the State Board of Agriculture, requesting that no premiums be offered on tobacco or intoxicating liquors.

The first Erie county fair was held in Sandusky in 1855 with success. Sealed bids were taken the next year to decide whether it should be held at Sandusky or Huron. The latter having bid one thousand dollars and free use of the grounds against the offer of Sandusky of eight hundred and fifty dollars and free use of the grounds, held the fair for five years, when sealed bids were again taken. Huron, knowing she could not compete with Sandusky a second time, put in a blank against the offer of Sandusky of two thousand dollars. There were no more fairs until 1865 on account of the war. Since then it has been held in Sandusky.

Our county fairs have continued to exist and have been very prosperous. Their influence has permeated the innermost recesses of the farm houses and brought out the families of farmers to meet each other, to see what has been done in the neighboring townships, and how they may best improve their own farms.

The county fair should be a school and each person a member. I believe every branch of work in the county and the city should be exhibited at our fairs, with a healthy competition. This would make it both interesting and profitable.

A county fair is like our government, it is by the people and for the people. Each person who buys a membership ticket at the fair is a member of the society and entitled to a vote. Instead of finding fault, attend the agricultural meetings, vote for those who will carry on the work as you want it, have your committees selected from every locality, which will not only create an interest in the fair, but will, in my judgment, obviate partiality in the award of premiums. Put new life into your fairs by giving the children a chance. I learn that in the eastern states this is being done with success.

At our Sandusky fair last fall premiums were offered to children under fourteen years of age for animals, vegetables, fruits, flowers, poultry, geological specimens, collections of bugs, herbariums, stuffed birds, bread, cookies, biscuit, pickles, jellies, etc., and many were interested through the children that had not been in the habit of attending. Every farmer should, as soon as his boy is old enough, give him the use of a piece of ground, teach him how to sow seed and care for them; teach him the chemistry of the soil, what it needs and why. The bulletins from our experiment station might be made so interesting in this way that they would supplant the yellow covered novel and your boy, instead of stealing away to bad associates and bad habits, would be learning that which would be a source of pleasure and profit all his life. Why not try experiments with different soils and plants and place the result on exhibition at the fair?

Another plan which might increase an interest in the fairs would be for each subordinate grange and farmers' club to make an exhibit at the county fairs, then select the best from each county and take to the State Fair, as the state has given us an opportunity, and thus arouse a competition in different parts of the state, which would benefit not only the county fairs but the State Fair also. Such an emulation might awaken a great interest among the farmers.

A disposition to excel is commendable, God surrounded us with beauty and gave us a love for the beautiful, also a desire to do better and be better. This is noticeable in plants. Place one of low habit by one that is tall and it will grow far above its natural height to reach its neighbor. I have seen the velvet violet, the little johnny-jump-up grow as high as twelve inches to rival a taller plant.

You have perhaps read Holmes' poem on the pumpkin vine which grew and grew until it reached the highway then climbed to the third rail and thrust a blossom through to the wonder of the passer by.

We see the johnny-jump-ups and pumpkin vines every day. Many of our positions of trust and eminence are filled by boys and girls of humble birth who have set their mark high and walked steadily on, a slow but sure growth until they have reached the highway and forced the recognition of the world.

The fair may be the means of bringing out our boys and girls, giving them something to work for and raising their standards higher.

Some years since our farmers entered their farms for premium and I think it was a good plan. It stimulated to greater activity and more thorough work. It may not be the highest incentive but it is natural to take more pains with work that is to be put on exhibition. I sometimes wonder if it would not be well to enter our homes for premiums, not to be awarded to the most luxurious or most expensive but to the most homelike, the home where the prime object is the happiness and comfort of each member of the family. It is not the amount of money spent that makes the happiest or most comfortable homes. It is the arrangement and atmosphere that brings comfort and ease. Do we, as home makers, study to get all the comfort and happiness out of our homes for the family? The love of greed ofttimes blinds us to the blessings within our reach.

Let us in our daily life aim to help all we can, for as Whittier says:

"Give fools their gold, and knaves their power;
  Let fortune's bubble rise and fall,
Who sows a field or trains a flower,
  Or plants a tree is more than all.

For he who blesses most, is blest;
  And God and man shall own his worth
Who toils to leave as his bequest,
  An added beauty to the earth.

And soon or late to all that sow,
  The time of harvest shall be given,
The flower shall bloom, the fruit shall grow,
  If not on earth, at last in Heaven.

WHY FARMERS SHOULD ORGANIZE.

By M. J. Crocker, New Athens, Ohio.

[Read at the Farmers' Institute held at Cadiz, Harrison County, February 9 and 10, 1898.]

They who first braved the perils of the stormy sea and endured New England's rigorous clime for the sake of religious liberty; they who assembled at Lexington and Concord to oppose the tyranny of George the Third, and put the red coats to flight; they who most readily surrendered the comforts of home and the association of friends, to bear arms on the southern battlefields in defense of their nation, when a part of our people sought to rend her in twain, were farmers.

And today I rejoice that it is my privilege and my honor to come before a body of the same character on an occasion of this kind.

It was my good fortune—for I esteem it a fortune—to have been raised on the farm, and from this fact I have formed an attachment for rural life which neither time nor experience can efface. Into whatever positions of life I may be driven by force of circumstances, the scenes and experiences of the old farm home and the lessons which contact with nature there impressed shall ever remain verdant to bless and cheer my lonelier hours.

May the young man whose good fortune it is to be possessed of a farm home take heed, for his is an heritage not to be trifled away. Whatever may be the allurements of the city, may he be assured that "all that glitters is not gold." His life on the farm is most intimately associated with the comforts, the teachings, and the beauties of nature. He, too, may sing in the words of the poet—

> "To him who in the love of Nature holds
> Communion with her visible forms, she speaks
> A various language."

May all due respect, honor and praise be to the farmer and the calling which he represents, for it is not only the oldest of all occupations, but it is the most essential as well. Without agriculture in some form all must perish; without the other industries men have survived.

From ages before the flocks of the tribes of Israel roamed the hills of Palestine, through ages since, even to the present, agriculture has been a potent factor in the material welfare of man. But notwithstanding this fact, perhaps there is no class of people that has suffered more injustice in the past than has the agricultural class. But why has it suffered injustice? Simply for want of united effort. And how may it better its condition? Only by organization, towards which much has already been done, as this assembly of farmers gives evidence.

Let us notice, then, some of the reasons why farmers should organize. In the first place, the farmers should organize because "in union there is strength."

It was that venerable old gentleman, president of the convention which adopted the Declaration of Independence, who said, as he stepped forward, being the first to sign his name to that unrivaled document, "Gentlemen, we must all hang together or we shall each hang separately." And the farmers, I believe, are beginning to realize the same fact.

Political economists have classed all the industries under three divisions, namely: Transmutation, Transformation and Transportation. From the latter class the past few years have seen many powerful organizations effected.

That the steamship lines, the motor lines, the steam railways, coal combines, boards of trade and commercial enterprises of every department, are wielding a mighty influence, much to the expense of agriculture, is only too well known to the farmer.

The second class has by no means permitted to lie dormant the opportunities and advantages of organization. Are not the steel plants, the oil combines, the elevators, the packing houses and various other manufacturing establishments that fringe the coast of every great commercial city in our land indicative of organized strength?

But what of transmutation? Bringing up the rear with scattered forces; groaning under the burden of care; plundered by King Monopoly. Farmers will you ever awake to the source of your oppression? Will you ever unite forces for a mighty siege which shall either end in a complete defeat or secure justice for the farmer? Are you bondsmen or are you free? Are you the subjects of Monopoly or are you the children of Liberty? If the former, may you surrender all; if the latter, may you unite and assert your rights.

Combine must battle against combine. Individual attacks will ever count for naught. Many combines are for the purpose of putting down competition within their own occupation. This, however, is not the burden of the farmer, for he never yet has had the privilege of making his own prices. When he sells, he is the interrogator, and his question is, "what will you pay?" When he purchases he is still the interrogator, and his question is, "what do you charge?" The cause of this is self evident; it is want of organization; not farmer in competition with farmer, but farmers in submission to others.

"United we stand, divided we fall." This is the motto of a state which was a middle ground between the Blues and the Grays, when our nation was in imminent danger of disruption, and how appropriate would it be for the farmer who stands between all other classes as the producer of the bread of life.

But note a few of the direct benefits that would accrue to the farmers by means of united strength. First of all, it would give the farmers their just share in the power of legislation, which share, heretofore, has been extremely meager. Meager because our representatives and senators, for the most part, have secured their seats through the influence of a class that is not directly interested in agriculture; meager because our legislators themselves have not been and are not farmers; meager because farmers even in asking just enactments, are not heeded, for they do not make their requests as the representatives of an organized force.

Other industries secure enactments favoring them, by means of organization. The farmer must do likewise. But some one cries "Class legislation." Call it what you please, in this case it is simply a necessity. But why should we say class legislation, for as there are various industries and diverse sections so there is and ought to be, legislation accordingly. Class legislation favors one class at the expense of another; just legislation grants to all classes the rights of life, liberty, and the pursuit of happiness, in their respective spheres. If the legislature sees fit to incorporate a village, to establish a special school district, or to charter a college, we do not cry class legislation, although it is a favor to those particular parties. If the railroad system of any state should bribe the general assemblymen of that state into the enactment of unjust laws favoring them, on the conditions that they would grant to the legislators, free transportation to all points, then might we shout "class legislation."

Just such improbable things have occured. But because our state is subdivided into counties, townships, and corporate villages, in order that these sections may be granted, by legislative enactments, certain rights which would be wholly inappropriate for other sections, do we cry, injustice? Why then is it unjust for an organized body of farmers to ask certain privileges of the legislature which in no way interfere with the honest prosperity of others?

Not only would organization give the farmers influence in dealing with the legislature, which is proven by other organizations not all of which are monopolies. for the Grand Army of the Republic is not a monoply, and its influence is a power, but it would enable them to send men from their own numbers to represent them in the government.

And may God speed the day when farmers shall confide in farmers, and shall arrive at a realization of the fact that there are men with brains even in their own ranks, and that they need not surrender all their rights into the hands of political shysters who care no more for the farmers' interest than the dude for the farmers' plow; who, during the campaign, shakes your hand with all the ardor of a minister and feigns to be your dearest friend, but how often has he deceived you? Would it not be better to organize and resent these vile intrusions, than to stand apart clinging to party lines and be consumed body, mind, and soul?

But here is one of the grave objections to farmers organizing. Some say that it will necessitate a breaking up of party lines, and so it will and so it ought to do. Are not our liberties, our homes, and our loved ones dearer than party ties? It would appear that a single reflection upon the interests and requirements of farmers and the means by which they are to be attained, would be sufficient to settle this question.

Are you a republican, or a democrat, a prohibitionist, or a populist, justice to the farmer or to humanity at large is your aim. Would you not accomplish your purpose much sooner to discard the old party lines, discordant as they are, and make your advance with a united force of farmers, such as gladden the hills of New England with their patriotism, such as brought forth our Washingtons, Jeffersons, Websters, and Clays, free from party guile, than with scattered ranks to waste your time and talents, efforts and ballots upon hirelings, spendthrifts, and political demagogues.

It has been said that the power of civilized society, as contrasted with savage, lies in the energies controlled and directed through organization. And again, that we are pleased with the orderly relations of the seasons, and the harmony of nature in all her parts. "The system of the universe guides our thoughts to philosophy, our hearts to veneration, and our souls to prayer."

An eminent agricultural writer says: "It has passed into an axiom that farmers will not stand by each other, and hence are fair game. The safest man to kick all the world over, is the farmer." "The amazing thing of all is that outnumbering in the West all other professions combined, they tolerate and endure all of this and patiently bear the yoke, contracting their expenses to their contracted income, renewing loans in hope of better times in the future."

Again the farmers should organize to resist the intrusions made upon them in the way of taxation. How to make taxation productive is a vast and complicated science. Turgot, one of the wisest of financiers, called it the art of plucking the goose without making it cry. It is true, that whenever the produce of a tax is used otherwise than in the service of those who pay it, the tax is unjust, it also has been largely true that the farmers have borne taxation without representation. For this they, themselves, are very much to blame, for while they have had the suffrage franchise as have others, they have not united sufficiently to use it in a way to benefit themselves.

We are, perhaps, all aware that taxation is of two varieties, direct and indirect. The national government collects all of its taxes by the indirect, the states and counties by the direct. The greater burden of taxation, is the indirect, we do not see it as such, however, for reasons which are sufficiently evident. Of direct taxation, the greater portion is used at home within our own counties, while the smaller portion goes to the state.

In Ohio the state portion is two dollars and seventy cents on one thousand dollars. Of the other states some run much higher and some even considerably lower; the highest being Nevada which has nine dollars on the one thousand, while Delaware has no state tax at all. Although the state tax is very low when compared with that required for local purposes, yet by extremely low valuation each county, it seems, endeavors to evade its just portion of this tax; and each in turn drives the other to like measures. Owing to this attempt on the part of the counties, to evade their just share in taxation, the states have been driven to establish state boards of equalization. But these boards are powerless to act where action is needed; for their business is to equalize and not to set valuations. This attempt to evade taxation by undervaluation begets a spirit of little regard for just reports, and consequently it leads to a concealment of such property as can be concealed. From this condition of affairs, the great burden of taxation falls upon the farmer whose property is of such a character as not to admit of concealment.

It is said that in New York personal property is increasing in value more rapidly than realty, and yet it is paying a decreasing proportion of taxation. To this fact Governor Hill called attention, in his message for 1886, stating that the personal assessments for 1884 were more than one hundred million dollars short of what they were for 1871. The valuation of personal estate being only one-eighth of the realty, whereas, he said, it should be nearly equal and thereby remove much of the unjust burden from realty.

Governor Foraker, in his message of 1887, said, "Personal property is valued all the way from full value down to nothing;" but we are to remember this, that it is not the personal property of the farmer that escapes taxation, but that of towns and especially of the large cities. We learn from statistics that in 1875 the real estate of Illinois paid 80 per cent. of her taxes, the railroads 5 per cent. and all the other property combined, the remaining 15 per cent. In 1884 Cook county, in which Chicago is situated, returned only three hundred and eighty-three million, nine hundred and eight dollars of taxable credits, including banks, brokers, bonds stocks, etc.

A telegraph company is said to have sworn in its lines in one of the counties of this state at fifteen dollars per mile; while the United States Treasury Abstract shows that this same company purchased six thousand seven hundred and eleven miles of lines at a total cost of five million dollars or about seven hundred and forty-five dollars per mile.

We read but a few days ago of a manufacturing plant which was damaged by fire, and a loss of fifty thousand dollars was recovered. The property was rebuilt, better than before, and now stands on the tax list valued at fifteen thousand dollars. Another manufacturing establishment was built at a cost of two hundred and fifty thousand dollars and stands on the tax list at seventy thousand dollars. This is also paying twelve per cent. on the investment. Another still larger establishment, has succeeded in getting on the tax list at four per cent of its capitalized stock, none of which can be purchased below par. There is no lack of illustrations of a similar character.

Again, we notice that if an enterprising young farmer, having secured means enough to partially pay for a farm, and desiring a home of his own, invests the same in a farm home securing the unpaid balance by mortgage, he not only pays interest on his indebtedness, and taxes on what he actually owns, but he is compelled to pay tax upon his indebtedness as well. Had he invested his money in credits and done as many do, he might have escaped taxation entirely. But what of the principle, and what of the encouragement to agricultural enterprises?

Henry George's proposition was to abolish all taxes except that on land, but how the farmers and landowners denounced this theory; yet they are living under very much the same system, in practice, at present, and would rather cling to party lines than organize, as farmers, and denounce this heinous practice.

The advance in the rate of taxation on improved farm land over the unimproved is a question over which there is some controversy, not wholly without cause. While the man with means, to put his property in the very best order should pay some taxes upon the amount thus invested, yet we believe it should not be carried to such an extent as to kill all such enterprise, and thus put a premium upon slovenliness. It should not be carried to such an extent as to induce the farmer to live in a mere hovel, while he employs all his means to broaden his acres, that they may lie desolate in their wide expanse, uncultivated and unproductive.

This fact of taxation is possibly the cause of so many acres laying waste throughout this great country of ours. Were we to compare these acres with the garden spots of Germany, Holland, and other Old World Empires, where every foot of ground is made productive, we would certainly conclude that all our land is not yet raised to the highest stage of productiveness.

On indirect taxation we will say but a few words. The internal revenue portion of indirect taxation causes less partisan controversy than the imposts because it is not covered up by so great a mass of partisan trash, hence the people more clearly perceive the workings of it.

The farmers' diverse views with reference to imposts, it seems to me, are the result of being blinded by old party sentiments, whereas they should abandon party prejudices and look to the interests of their class. How it is that Jones can be benefited by a low impost duty and his neighbor, adjoining farms, by a high one, and *vice versa*, I never could understand. Is it not the result of party bias and not of actual welfare? We shall not attempt at this time to say which is wrong, but one must be greatly in the wrong for their actual interests are almost identical.

Another question which rightly comes under taxation is that of public extravagance and exorbitant salaries paid to public officers.

That there is usually no such discretion employed in the use of public funds, as in private, is well known to all. This ought not to be so, and of course is not in all cases, but how largely is it true. Again, why do you as farmers permit such exorbitant salaries to be paid to public officers and then grumble about it? It is in your power, if you will, to call a halt to these impositions. That these salaries are too high is proven by the zeal and determination with which the position is sought, as well as by the enormous sums expended for this purpose, annually.

Public officers should be paid a higher grade salary than common laborers, for if they were not, the rabble of the land would seek and obtain these places, the more worthy would find employment in other lines and our condition would be deplorable. But while this is true, we can manifestly lower the salaries of public servants without lowering the dignity of the office, without throwing out of the contest the men who now enter, or those equally as worthy, and without cutting their salaries anywhere near to a mean.

Is this question not worthy of your united consideration when it so clearly involves your welfare as farmers?

We have said enough about taxation to show the farmer conclusively that he is the subject of its burden. What will you do with the burden, continue to bear it or throw it off? If you choose the latter how will you proceed, individually or unitedly, as a partisan or as a farmer?

Another advantage which the farmers would derive from a thorough and systematic organization is social and intellectual culture. Man by nature is a social being and so far as he goes contrary to this condition, he violates the laws of nature. It is true that farmers are deprived of many privileges, socially and intellectually, which are open to those of other callings, yet much may be done in this respect by means of organization.

Until very recent years, we had no department of agriculture in our national government, whose duty it is to guard the interests of the farmer. We had no agricultural institutions of learning in which the young man from the farm may acquire intellectual growth, and become more proficient in things pertaining to agriculture. We had no experimental stations at which many trials are made and many discoveries brought forth. We had no farmers' institutes in which many questions of interest are discussed and many thoughts advanced which are of material benefit to the farmer.

If then we have derived so many advantages from these things which are more remote, how much more shall we be benefited by local organizations, in which farmers may come in contact with farmers; in which they may study valuable books and papers; in which they may interchange opinions and discuss topics, not only pertaining directly to the farm, but questions of business, of law, and of legislation. In short to thoroughly acquaint themselves with all these topics in order that they may have, at all times, men thoroughly competent to fill the positions of trust and of honor in which the farmers must have a share, or ever remain to a great extent at the mercy of others.

All organizations have their auxiliaries and coworkers, and I believe one of the greatest coworkers and worthiest supporters of farmers' organizations is the local paper. This organ and the farmer have ever been mutual benefactors. Much of the editor's firm support comes from the farm, while on the other hand, many of the farmer's desires and needs have been advocated and pushed to a successful issue through the instrumentality of this organ. May their relations continue in the future as they have been in the past, and may the editors, through their publications, do much toward bringing the farmers together into a permanent union, which shall enable them to combat successfully their organized foes.

Let us notice in closing, that the rural districts have ever been the most favorable for rearing boys and girls, and directing them into the paths of usefulness, as is proven by the history of the past.

What a vast number of the world's truly great and useful men and women has the farm sent forth, attorneys and orators, editors and poets, historians and divines, and of the most untainted and determined character. If such were the result of rural life under the conditions of the past, what a future there is in store for the farmer if he but seizes his opportunities ere they escape his grasp.

Now is the chosen time, and organization the opportunity. May you as farmers make the best of both. May you use all means at your command to advance the dignity and promote the usefulness of this worthy calling until it shall stand without a peer in its power for justice, truth and liberty.

PROPOSED CHANGES IN OHIO SCHOOLS.

By W. C. TICHENOR, Lebanon, O.

[Read at the Farmers' Institute held at Lebanon, Warren County, February 23 and 24, 1898.]

In a lecture delivered a few months ago the President of the Ohio State University said: "Ohio has no State public school system." Startling as this statement may seem it is nevertheless true. A system implies a rational combination of related parts; and a state public school system implies some relation at least of all free educational institutions supported by taxation. In Ohio, generally speaking, the three State Universities, the high schools, and the district schools bear no relation to each other, but are indeed laws unto themselves.

Without reciting in detail the objections to our present school condition let us turn for a moment to the state school system now generally recommended by educators, the one formulated by Thomas Jefferson, and now in successful operation with varying modifications in many states of the Union. It is not new to us, for its adoption has been urged upon Ohio a number of times.

It is, in short, a graded school system from the lowest grade in the remotest district to graduation from the central State University. The step between the district school and the high school, and again between the high school and the University is no greater than it is between the successive grades of each school. The pupil receives a diploma from the lower schools which admits him without examination to the high school and his diploma from the high school admits him without examination to the University. In this way all the discouragements of making up deficiencies for entrance in a higher school are avoided.

The University has either legal or moral control over all lower schools, and this relation enables it to unify the courses of instruction in the schools of like grade throughout the state, to recommend the appointment of certain suitable teachers, to keep informed by visitation of the character of the work done, and to insist upon changes which may be deemed necessary to maintain a certain degree of scholarship. If such changes are not made, the University has the right to withdraw from such schools the privilege of entering their pupils into the University on diploma. This power seldom fails to keep the scholarship of the schools up to the desired level.

The Western States are strongly in favor of the plan, because of its wholesome effect upon the district schools. In the past two years four of the states, notwithstanding the hard times, have doubled their appropriations to the Central State Universities. Facts might be multiplied indefinitely to show that the states are becoming more and more convinced of the benefit derived by the schools from this unified system. Nearly all teachers and educationists believe this to be the best solution of the state schools problem.

The adoption of this centralized system has been comparatively an easy matter at the West, for it could profit by the costly experience of the older states. But here in Ohio where the schools have been organized for from twenty-five to seventy-five years the case is very different. Free schools were unknown in Ohio during the early years of her statehood. Some of you doubtless remember the old subscription schools. The teacher collected one dollar and a half in money and a one-quarter cord of wood per pupil and agreed to "board 'round among 'em." The free school idea met with much opposition, many considering it an injustice to be taxed to educate a neighbor's children. The right of the state to impose taxes for public instruction is now no longer questioned; but it is this school history and tradition, and the existence of institutions limited by them that make reform in many of the older states so difficult.

Many sentiments surrounding the schools as they now exist oppose the change. Besides we have three State Universities which would wage war for the leadership, and thirty other colleges which would oppose any attempt to make the public schools preparatory departments to the State University. To avoid these latter difficulties it has been suggested that all colleges be asked to maintain a certain curriculum subject to state superintendence, and that the high schools be graded up to entrance on diploma into any one of these. Colleges complying with this agreement would soon be distinguished in point of scholarship and enrollment.

But the particular solution of the college phase of the problem is not so important provided the benefits of intimate connection with higher institutions accrue to the public schools. Too much thought and money are being spent just now on colleges, and too little for public schools. The universal complaint is that our school systems are top-heavy. While colleges are receiving millions in endowments, not one of the larger cities in the United States has adequate public school facilities. The welfare of the public schools should concern every one. They are the keystone of our republican institutions, the main support to that general intelligence of the American masses upon which our form of government rests.

Just now the schools in the country districts are wrestling with a serious problem. Many of you who were children a generation or more ago have observed that the number of pupils attending the district schools has been growing less and less until now instead of the forty, fifty or sixty of your school days we find only twenty, twelve or six. This steady decline in the number of pupils is not confined to any locality; it is true throughout the whole country. It may be due to the fact that large families are less common now than formerly, and to the steady migration of the farming classes to the cities. Be that as it may, the change has come, and something must be done to meet the altered conditions.

Educators who have sought a remedy for this evil are almost unanimous in advising that weak district schools be closed, and that the pupils from such schools be conveyed at public expense to a central point where a good school can be maintained. This central school might embrace two, four, eight or more grades; and if sufficient territory were included, a high school might be maintained also. This plan was first tried at Concord, Massachusetts. It worked with marked success, and has since spread throughout the rural districts of many other states. The townships, or new school districts, furnish large wagons; these are provided with stoves and placed in charge of experienced drivers who are responsible for the safety of the pupils on the way to and from the school. Every morning the wagon goes from house to house throughout the district, the blowing of a horn announcing its approach. At night the wagon calls at the school house and leaves the pupils at or near their homes.

This plan has much to commend it. It permits of a better grading of the schools, gives opportunity for thorough work in special studies, and stimulates by numbers and lively competition. Besides it has the great advantage of securing better teachers. The district school at Paddy's Run, Butler county, used to employ only teachers, who besides being versed in the common branches, were also capable of preparing pupils for college. An unusual number of the alumni of this school became distinguished in later years. Murat Halstead attributes this marked success of his schoolmates to the greater capability of the teachers employed. The community demanded good teachers, paid them good salaries and good results followed. But in how many district schools in Butler county or any other county are such requirements made today? Well equipped teachers demand good salaries, and the district taxpayers feel that they can not pay fifty, sixty or seventy dollars a month for the instruction of six or eight pupils. Many good teachers, too, refuse to teach in schools where the enthusiasm of numbers and the stimulus of lively competition are wanting.

But aside from the betterment of the schools themselves the plan of union would provide a suitable building for public gatherings and social entertainments, and might serve as the repository of a free circulating library.

Furthermore—and this is of prime importance—the central system is cheaper. It costs as much to warm a school house for five as for fifty, and the salaries of three or four cheap teachers amount to more than the salary of one good one. So it is possible to carry the scattered pupils to a central building, give them better instruction and more of it, and still save money.

For the following facts I am indebted to the Youth's Companion: "Six district schools in Enfield, Connecticut, which had less than ten pupils each, cost the township one thousand, seven hundred dollars a year. The township adopted the central school system and dispensed with the other five schools. The cost of carrying those same pupils to the school, together with the cost of its maintenance, was reduced to about one thousand and forty-five dollars, making a saving of six hundred and fifty-five dollars. The amount saved can be spent to good advantage in hiring better teachers or lengthening the school year."

But the most remarkable instance of saving is the following: "A township in Massachusetts which was educating children in small schools at a cost, in one instance, of sixty dollars a year for each pupil, by consolidation, reduced the cost for each pupil to eight dollars a year including transportation."

The same plan by permissive legislation is in operation in several of the northern counties of Ohio, a consolidated district at Kingsville, Ashtabula county, reporting a saving of one-half by the new plan.

In 1896 Ohio's school expenditure amounted to nearly fourteen million dollars. Not including the amounts paid to the State Universities the total was thirteen million seven hundred and fifty-seven thousand, one hundred and nine dollars and seventy-two cents. The total of school expenditures in Warren county the same year was one hundred and nineteen thousand, three hundred and eighty-four dollars and thirteen cents. If the consolidation of schools should result in only a one-third reduction of the present cost, the annual saving would be, in round numbers, forty thousand dollars to the county, and something over four and one-half millions to the state.

Ohio pays more for salaries of teachers in the districts than most other states. Indeed she pays enough for schools, if wisely applied, to support the best state system in the world. Even under our present disadvantages, our country schools compare very well with those of many of the northwestern states which have better school systems. But this is not due to any merit of the school system of Ohio, but to the larger foreign born population in the rural districts of the Northwest.

In our General Assembly a bill was recently introduced to provide more generally for the consolidation of districts in the same or adjoining townships throughout the state. If the plan works well elsewhere, why not here? We have as good roads as can be found; the country is more thickly settled than many farming regions, so that the territory embraced in such a school district need not include any farms more than half an hour's ride from the school house. The districts at present are somewhat less than two miles square and have an average of perhaps seventeen pupils enrolled. Let us assume for illustration that the new districts shall comprise nine of the present districts. The nine schools combined would furnish an aggregate of one hundred and fifty-three pupils which would admit of careful grading; while the farthest farm would be less than three miles from the school building.

There is no reason for recognizing county lines, and the districts might embrace parts of two or more counties if found desirable. Another improvement which it is hoped consolidation would bring about incidentally, pertains to the control of the schools. At present the township boards have practically absolute power to follow any whim. By way of contrast a short analysis of the Prussian system of control of schools may be of value here.

In each state or "dominion" in Germany there is a member of the cabinet known as the Minister of Culture. This minister appoints an Upper Educational Advisory Board, and it is by this board that all important school regulations for the state are prescribed. The most important among the laws made by this board are those concerning the qualifications of teachers and those relating to the courses of study. This board is composed of professional men among whom are distinguished educators.

Besides the higher board there are in each state a number of lower educational boards having charge of the schools of the various districts into which the state is divided. These would correspond perhaps to our township boards. But the independent authority of the lower board, as well as of the inspectors appointed by them, is extremely limited in regard to pedagogical affairs, their particular mission in this direction being to see that the schools are complying with the laws prescribed by the Upper Board. By this system the Prussian schools are the models for the world.

Why we may not deem it advisable to give up local school government to so great an extent, since our schools are conducted on principles opposed to the German polity; still there can be little doubt that some limitation of the present power vested in the township boards would be of great benefit to the schools.

Now, of course, this plan of consolidation would meet with opposition. Many would oppose the change because it is a change; others would see a loss of profit in supplies to the schools. But the greatest opposition would likely come from the teachers themselves, for it would throw more than half of them out of employment. Nevertheless, if the subject were agitated it is believed that the mass of the people would soon be convinced of its advantages and would insist upon its adoption.

Consolidation of district schools would likely further some plan of state unification, for the systematic grading would demonstrate its own advantages, and the question would arise, "If centralization is of such benefit when applied to district schools, why not of still greater advantage when carried farther?" Public opinion becoming thus molded, adequate legislation must soon follow.

But all attempts to join the schools with the State University have thus far met with opposition from the other colleges, and this at a loss to the schools and to the state; for the schools have been deprived of the University's influence, and more pupils have gone out of the state for their degrees. Where there are so many competing colleges within a state, they are often compelled, in order to secure students, to make concessions to them which tend to belittle the scholarship or the highest standing of the colleges. The effect is that many pupils who have been specially prepared at city high schools or elsewhere prefer to receive their degrees from institutions whose standing is unquestioned.

As a result the statement is made that while Ohio has more colleges than any other state in the union she still sends more pupils out of the state for their degrees. But with the same number of well prepared pupils there is no good reason why any one of our State Universities should not rival Columbia, Cornell or Chicago. But our first need is not great Universities, but great public schools; and these it seems are to be best secured by some form of state superintendence.

By this plan University extension courses could be instituted by professors lecturing to the consolidated schools, and the University even directing the studies of graduated pupils who found it more convenient to study at home. And is it too much to predict that under this unified and centralized system the district schools would soon be connected by means of quick communication with the higher institutions, thereby bringing the daily results of experiments, the progress of classes, and in general the inspiration of the University atmosphere directly into the school room? The schools being brought thus into close relation would vie with each other in employing the best teachers, and maintaining the highest scholarship. Advice of the University faculties would be frequently sought, and fewer teachers would be elected because of their family, lodge, church or party relations; and more—great desideratum—on account of their accredited fitness to teach school.

Another proposed change pertains to the subjects taught in the district schools. Educators believe that the courses of study pursued at present in the district schools point more to the store and office and away from the farm; and that this is one reason for the great migration of farmers to the city. If they find farming unprofitable and unattractive, they meet with no greater success in the city; for statistics show that only a very small per cent. succeed in their new environments.

The seriousness of this movement in its effect upon national morals must not be overlooked. Thomas Jefferson said that our republic would last so long as our people were chiefly agricultural in their pursuits; but when they became crowded together as in foreign cities our civilization would become as corrupt as that of

Europe. The recent disclosures of conditions in Chicago bear out this prediction.

During the hard times the authorities in our cities who provided potato patches for the unemployed after Mayor Pingree's Detroit plan, reported that the morals of the men so engaged were much better than when the same men were employed in the shops and factories.

The Germans and the English have seen this defect in the district schools, and have sought to remedy it by the establishing of school gardens or incipient farms. Gardening and horticulture are taught in preference to geography, theoretic grammar and ornamental penmanship.

The natural sciences generally are given the preference. The nomenclature presents the only difficulty in teaching children science. But practical methods have lessened this difficulty. Science as entomology deals with bugs and butterflies—just what children take to. Science as botany deals with flowers, fruits, trees—just what all children like. As geology it deals with dust and stones and brookbeds. As ornithology, with the birds, their songs, plumage, and migrations. As zoology it deals with rabbits, squirrels and dogs—the children's pets. As chemistry it pulls things to pieces and reconstructs. As physics it plays with waterfalls and sunbeams.

Not that the "three R's" are neglected in favor of science; but in place of such studies as text-book geography and technical grammar, other studies are substituted which will acquaint the pupils with land and what is on the land; or education that unfolds the nature of soils and the wonders of life in and on the soils; that shows them how to master their farm foes, and to receive the benefit from their insect, bird and plant friends.

In reviewing these school questions it is not believed that such radical changes will come in a few years, but it does appear very probable that they will come in time.

If any facts have been repeated which shall assist in any degree, these changes, towards which all school systems seem to be moving, this paper shall not have been in vain.

THE VALUE OF GOOD ROADS.

By Hon. D. J. Cable, Lima, O.

[Read at the Farmers' Institute, held at Harrod, Allen County, February 23 and 24, 1898.]

This subject has two meanings—first, what may be the cost or expense of good roads; second, what may be the benefit to be derived from good roads. The first branch of the subject naturally involves a discussion of the economical construction of roads looking to their permanency and use; the other branch relates to good roads with reference to the general benefits that accrue to a community and to individuals by reason of access to them.

There has been so much discussion with reference to the construction of good roads, that I will give but a limited time to the consideration of that branch of the subject.

The physical construction of roads or permanent highways naturally divides itself into that of "Drainage of Roadbed," The Preparation of Subgrade," "The Material to be Used and the Manner of Using Same," and "The Economical Care and Maintenance of the Roads after their Construction."

The most important element of all is that of drainage. No road should ever be opened for the use of the public—either a pike or a dirt road—unless it be thoroughly drained both by side ditches and by tile drainage. The road should have a grade, wherever possible, not to exceed five per cent. The portion of the road, on the right hand side, going in the direction where heavy loads are hauled, should be slightly lower than the left hand side, so that the macadam will come but little above the dirt road along the side. The side ditches should be two feet deep and always kept open. A tile drain should be placed at the side of the stoned portion—that is, a tile drain will be located about the middle of the road and on a line between the macadam and dirt road. The other tile drain should come on the right hand side of the macadam and between it and the open ditch. Both ditches should be not less than three feet deep and should be filled with coarse broken stone containing no fine material. The grade should slope toward these ditches. The stone which fills the ditches will be a part of the pike, and should be finished just the same as the remainder of the pike. These tile ditches should have outlets at every convenient cross ditch and stream.

Mr. Webber, in New Roads and Road Lines in the United States, says:

"The roadbed should be drained in all places whether the subsoil is clay or packed, so that the surface of the road will have no standing water under it, to the depth of at least three feet, and there is no word which should be so thoroughly impressed into the minds of all connected with the making of roads as the word *drainage*, *thorough drainage*, *deep drainage*."

Even a dirt road, prepared in the manner above indicated, within a very brief period after a rain will be a good road.

There is a county in Illinois which has provided road machines, rollers, scrapers plows and a traction engine, has thoroughly drained its roads and by leveling the same up, and keeping the road machines at work throughout the spring, summer and fall, maintains a good system of roads, without building any pikes.

County commissioners ought not to build any pike or construct any road whatever, unless the same is thoroughly drained, and they should not repair roads, and waste the funds of the county, by piling stone upon roads which are so wet that the stone simply sinks into the mud and is lost.

To drain a road in the manner I have described, will cost from two hundred dollars to three hundred and twenty dollars per mile; and if the commissioners would utilize one-half of the road fund for that purpose, they would make greater progress toward good roads than in any other manner. Where water is standing along a road, even at a depth of one or two feet, it matters not how good macadam may be constructed, heavy loads will force it into the subsoil and within a short time destroy the road.

After a roadbed is drained, it should be graded for a dirt road on the one side and macadam on the other, and rolled with heavy rollers, so that there will be no soft places in the road which will sink down after the macadam is put on, thus forming ruts or holes. The grade should be so made as to run the water toward and into the tile drains. Do not leave a shoulder of earth to hold the macadam in place, as it will also hold the water, rather make the shoulder of gravel. On all roads, except those which are most heavily travelled, the grade should be macadam, eight feet in width, and a dirt road of like width or a little wider. On the heavily travelled roads, the macadam should be fifteen feet wide, and the dirt road about ten.

The difficulty that our commissioners encounter at the present time with reference to roads that have already been constructed, is concerning the drainage and grade. It is more difficult to make an old road over and make a really good road out of it than it would be to make a new road in the first instance.

Mr. Shaler, who is a member of the road commission of Massachusetts, under the new law in that state, has written a book called "American Highways," in which he classifies the material for macadam, and places trap first, granite second, chert third, and limestone fourth. Trap is a substance thrown up by volcanic action and makes a very durable road because it will not be rendered as fine as limestone by the wheels of vehicles, and it, as well as granite, is a heavier rock than limestone, and will not, when rendered fine by the action of the wheels, blow away, nor will it wash away from the road as easily as limestone.

However, the best material for this locality is limestone broken into the size of not less than two and one-half inches in diameter, and not exceeding three inches, and placed upon a graded roadbed to the depth of eight to twelve inches, depending upon whether the road is one to be used for heavy hauling or not. This material should be thoroughly rolled with a ten or twelve ton roller, so as to pack it into position and render it firm. It should then be topped with fine granite chips to the depth of about one inch; or, if that can not be obtained, with good clean gravel (not sand,) and free from any loam or soft substances. This gravel is much bettler than fine limestone or limestone dust, as it will not be washed off the surface of the roads by heavy rains, nor will it blow away when in the form of dust, as easily as the limestone. In all, sufficient should be used to bind the top of the rougher stone. If the road is thoroughly drained, it takes a less thickness of macadam than otherwise, and the cost of the drainage is saved in the less amount of macadam necessary to make a good road. After the gravel is applied it should be again rolled with a heavy roller, and, to make the most perfect road, it should be sprinkled before it is used to any great extent.

There have been many different methods suggested for building permanent highways. Brick paving has been suggested, the brick to be laid in such a manner that they will come under the wheels and the road to be macadamized between the strips of brick. In New Jersey, they are now laying an iron rail, on the level with the macadam, upon which the wheels can run; these methods, however, are not yet determined to be practicable. In Massachusetts, the State Commission lays macadam, fifteen feet wide.

The cost of constructing a road as above suggested is not greatly in excess o what we have been paying in the past; and, if the county commissioners were to adopt a system and enforce it, it would not be many years until the state would be far advanced with reference to its roads. Of course, for a few years, a less number of miles would be built, but they would be more lasting and more beneficial. The old method of crushing limestone into promiscuous sizes from dust to large stone, and, without screening or separating, throwing it upon the highway is a very great error and a waste of money. The commissioners are not entirely to blame for this system. It was adopted before much attention was given to economical road construction; and, at the present time, it is difficult to change from the old system to another, owing to the fact that many farmers have been paying taxes for years with the promise and belief that they would soon be provided with a macadam road past their farms. The adoption of a new system would delay this expectation some little time and the commissioners are no doubt timid about the good will of their friends who are expecting a certain amount of pike to be built along their farms and in their locality. But in the interest of all the people, and especially for the permanent good of the community, we believe that the commissioners should seriously take the matter up and cease placing stone on the roads not properly drained and material which is not properly spread and screened, and which is not properly topped after being laid. Had the large amounts of money which have been expended for roads in the various counties of Ohio been used in constructing first class pikes, we would now be very well provided with highways.

Care is needed to maintain roads, and to understand this subject requires a knowledge of the causes which destroy them. One of the physical agencies is frost, which not only affects the roadbed by heaving, but has an effect upon the materials as well; rains and floods have a tendency to wash off the finer surface, and this is especially true of the macadam, leaving it exposed, which is one means of destruction; if the subgrade contains water, the shrinkage of the earth under the macadam, which sometimes amounts to one-fifth of its bulk in extreme dry weather, is also a cause; the wind, when the road becomes dry and dusty, will blow away the dust and sometimes some of the larger particles; the growth of brush or trees close to the macadam, so that their roots penetrate, has a bad effect; the work of the wheels upon the surface is another agent of destruction, which is greater or less, according to the width of the tire and the weight of the load. In short, roads wash out, freeze out or blow away more than they wear off, excepting where loose stone is thrown on top of a road without any covering of dirt or gravel, in which event not only does the stone wear out the road, but the stone itself wears out and, with it, vehicles, horses, harness and the patience of every person who is compelled to travel over such a highway.

The destructive work of these agencies may be prevented, or at least modified to a great extent, by proper care. The action of the frost can be prevented by perfect drainage; the action of the water can be reduced to a minimum by proper grades, side ditches and embankments. The action of the wind upon highways is reduced by planting trees or hedges along them. If trees are planted, they should be of varieties that grow without spreading their roots too much In England, almost all roads outside of the cities have hedges on each side and this is a very great protection.

The weight of a load has but little influence, if the proper width of tire is adopted. With narrow tires, the roads are soon cut up if the loads are heavy. It is a remarkable fact that those who haul heavy loads do not procure wide tires. An experiment made at Columbia, Missouri, by the Agricultural Experiment Station, has established many facts with reference to the saving of draft by the use of wide tires, the substance of which experiment is as follows:

"Numerous tests of the draft of wide and narrow tired wagons have been made at this station during the past two years on macadam, gravel and dirt roads, in all conditions, and on meadows, pastures and plowed fields, both wet and dry. The draft has been determined by means of a self recording dynameter. The net load was in every trial the same, viz., two thousand pounds. Contrary to public expectation, in a large majority of cases the draft was materially less when tires six inches in width were used than when the tests were made with tires of standard width—one and one-half inches. The following is a summary of the results:

1. On macadam street, as an average of the two trials made, a load of two thousand five hundred and eighteen pounds could have been hauled on the broad tires with the same draft that a load of two thousand pounds required on the narrow tires.

2. Gravel road. In all conditions of the gravel road, except wet and sloppy on top, the draft of the broad tired wagon was very much less than that of the narrow tired wagon. Averaging the six trials, a load of two thousand four hundred and eighty-two pounds could be hauled on the broad tires with the same draft required for a load of two thousand pounds on the narrow tires.

3. Dirt roads. (*a*) When dry, hard and free from ruts and dust, two thousand five hundred and thirty pounds could have been hauled on the broad tires with the same draft required for two thousand pounds on the narrow tires. (*b*) When the surface was covered with two or three inches of very dry, loose dust, the results were unfavorable to the broad tire. The dust on the road in each of these trials was unusually deep. (*c*) On clay road, muddy and sticky on the surface and firm underneath, the results were uniformly unfavorable to the broad tires. (*d*) On clay road with mud deep, and drying on top, or dry on top and spongy underneath, a large number of tests showed uniformly favorable to the broad tire. The difference amounted to from 52 to 61 per cent., or about three thousand two hundred pounds could have been hauled on the broad tires with

the same draft required to draw two thousand pounds on the narrow tires. In this condition of road, the broad tires show to their greatest advantage. As the road dries and becomes firmer, the difference between the draft of the broad and narrow tires gradually diminishes until it reaches about 25 to 30 per cent. on dry, hard, smooth dirt, gravel or macadam road, in favor of the broad tire. On the other hand, as the mud becomes softer and deeper, the difference between the draft of the two types of wagons rapidly diminishes until the condition is reached when the mud adheres to both sides of the wheels. Here the advantage of the broad tires ceases entirely and the narrow tires pull materially lighter. (*e*) Clay road, surface dry, with deep ruts cut by the narrow tires in the ordinary use of the road, in every trial, the first run of the broad tire over the narrow tire ruts has shown a materially increased draft when compared with that of the narrow tire run in its own rut. The second run of the broad tires in the same track, where the rut is not deep, completely eliminated this disadvantage and showed a lighter draft for the broad tire than the narrow tire showed in the first run. Where the ruts were eight inches deep with rigid walls, three runs of the broad tire in its own track over the ruts were required to eliminate the disadvantage. Three runs of the broad tire over this track have in all cases been sufficient, however, to so improve the road surface that both the broad and narrow tired wagons passed over this road with less draft than the narrow tires did in the original ruts. In addition to the saving of draft, the road was made very much more comfortable and pleasant for the users of light vehicles and pleasure carriages by the few runs of the six inch tire. Summing up all the tests on dirt roads, it appears that there are but three conditions on which the broad tires draw heavier than the narrow tires, viz.: (1) When the road is sloppy, muddy or sticky on the surface and firm or hard underneath; (2) When the surface is covered with a very deep, loose dust and hard underneath; (3) When the mud is very deep and so sticky that it adheres to the wheels of both kinds of wagons. It appears that the dust must be extraordinarily deep to show a higher draft for the broad than for the narrow tires. The three conditions just named, therefore, are somewhat unusual and of a comparatively short duration. Through a majority of days in the year and at times when the dirt roads are most used, and when their use is most imperative, the broad tired wagons pull materially lighter than the narrow tired wagons.

4. A large number of tests on meadows, pastures, stubble land, corn ground and plowed ground in every condition, from dry, hard and firm to very wet and soft, show without a single exception a large difference in draft in favor of the broad tires. This difference ranged from 17 to 120 per cent.

5. It appears that six inches is the best width of tire for a combination farm and road wagon, and that both axles should be the same length so that the front and hind wheels will run in the same track."

The law with reference to wide tires should be enforced.

After roads are built and proper means adopted to insure their permanency, some plan should be adopted to secure prompt and proper repairs. This might be done by letting out so many miles of repairs and maintenance to persons in each locality, the county providing at intervals, at the road side, proper material both for macadam and top dressing; also tile to be placed wherever necessary. It is astonishing how little work is required to maintain a properly constructed road. No pike will take care of itself forever without some repairs; ditches will become clogged, ruts will appear, water will stand, and all these require prompt attention. These same persons should also be given the powers of a constable to arrest any persons who are not complying with the law with reference to the use of roads or vehicles to be used thereon.

What measures should be adopted to provide funds with which to construct and maintain roads, is a question which should receive our most careful consideration.

New Jersey has taken the lead of all other states, and is about to be rewarded by the United States Government giving free mail delivery to the farmers in that portion of the state where good roads have been constructed. The law in that state relative to construction of roads in substance is to the effect that: "Whenever there shall be presented to the board chosen by the freeholders of any county a petition signed by the owners of at least two-thirds of the lands and real estate fronting or bordering on any public road, or section of road, in such county not less than a mile in length, praying the board to cause such road or section to be improved under this act and setting forth that they are willing that the peculiar benefits conferred on the lands fronting or bordering on said road or section shall be assessed in the proportion to the benefits conferred to an amount not exceeding 10 per cent. of the entire cost of the improvement, it shall be the duty of the board to cause such improvement to be made, provided that the estimated cost of all improvements under this act in any county in any one year shall not exceed one-half of one per cent. of the ratables of said county for the last preceding year."

The law further provides, "That one-third of the cost of all roads constructed in this state under this act shall be paid out of the State Treasury, provided the amount paid out in any one year shall not exceed the sum of seventy-five thousand dollars."

In Massachusetts, the state has created a Road Commission. When any town or township petitions the State Commission to make a highway a state road, the commission proceeds to construct a road in accordance with the best known methods, and forever after maintains the same, a certain portion of the cost, however, being taxed against such town or township. Wonderful advances have been made in that state during the past few years. Nearly all of the roads constructed by the commission in Massachusetts have been macadam roads, in which they have used material known as "Trap," "Granite" or "Limestone," placed upon thoroughly rolled and drained subgrades.

North Carolina has also adopted a system in which they have made great improvements in their roads.

It has been argued that the states should use convict labor in improving the highways. There have been arguments on both sides of this question. The plan is opposed by those who consider the detriment to the morals of the community to have convicts publicly engaged, the expense of guarding them and the trouble of moving them from place to place. But it seems to me the state might enact a law to enable it to purchase, in some half dozen or more places, quarries of material that will make the best of roads and apportion the convicts to these several quarries to prepare the material, making it proper for use upon the roads, and to load it upon cars for shipment to the several adjacent counties and might also require the railroads to transpost such material at actual cost, the railroads receiving large benefits because of good roads in any locality through which their lines pass; besides, they owe this much of a duty to the public.

Briefly stated, the benefits to be derived from the construction and maintenance of good roads are (1) the facility and economy of marketing and transporting all products and transacting business between communities. (2) It brings the producer and consumer closer together and brings the schools and churches near. (3) It will have the effect of inducing the general government to furnish free mail delivery. (4) It will increase the value of farm lands, because such value depends largely upon the condition of the roads.

The Hon. Roy Stone, at the head of the United States Road Department, states that the cost of the hauling of farm products to market or shipping points is principally governed by the condition of the roads. He says:

"The average weight of a load for two horses in the eastern states is two thousand two hundred and sixteen pounds; cotton states, one thousand three hundred and ninety-seven pounds; prairie states, two thousand four hundred and nine pounds; Pacific and mountain states, two thousand one hundred and ninety-seven pounds and the whole United States two thousand and two pounds.

The average cost of hauling a ton of two thousand pounds per mile in the eastern states is thirty-two cents; northern states, twenty-seven cents; middle southern states, thirty-one cents; cotton states, twenty-five cents; prairie states, twenty-two cents; Pacific coast and mountain states, twenty-two cents and the whole United States, twenty-five cents.

The average total cost per ton for the whole length of haul is, eastern states, one dollar and eighty-nine cents; northern states, one dollar and eighty-six cents; middle southern states, two dollars and seventy-two cents; prairie states, one dollar and ninety-four cents; and the whole United States, three dollars and two cents."

Hence it costs us about nine cents a bushel in the northern states to transport our wheat from the farm to the shipping point, while the railroads can make enormous profits in hauling wheat from Chicago to New York for six cents a bushel. The reason they can do so is because they have smooth, iron roadbeds with slight grades.

We can scarcely appreciate all the benefits that will accrue by reason of good roads; and not the least benefit is the increased value that is added to the property which has this advantage. It is stated on good authority that in Union county, New Jersey, by reason of the improved system of road construction and maintenance, farming lands are estimated at an average of two hundred and six dollars per acre as against the average value of sixty-five dollars per acre for the entire state. This added value is not assumed but exists, not only because of its capacity to raise crops, but on account of the economy in marketing and disposing of the same.

It is well said that "Good roads can be built all over this country without burdening the people, if systematic businesslike methods are employed in the work. Every mile of pike built in the country will increase the land values, improve the morals, elevate citizenship, stimulate trade, beautify the country, promote educational interests, raise the standard generally and add to the health and happiness of the people. Are not these things worthy of consideration?"

GOOD ROADS.

By Col. D. W. McClung, North Bend, O.

[Read at the Farmers' Institute held at Cleves, Hamilton County, December 20 and 21, 1897.]

It is clear that if we are to have good roads, the farmers must take an active and intelligent interest in the work. People in the cities have their solid and costly streets, and their smooth sidewalks. Very few of them have any interest in country roads. Many, indeed most of those who live in suburban villages, never put a wheel upon any street or road. They pass to and fro between the railroad station and their homes upon the sidewalks, indifferent to the sea of mud or cloud of dust upon the highway. I know a village where the chairman of the committee on streets and grades, was never known to use the highways for any purpose; he uses the sidewalks and the railroad. I have wished that I could get him into a road wagon, and bump him over our rough roads for three hours each day until some appreciation of their importance is pounded into him. As his head is not responsive, it would be well to try to produce an impression *aliunde*. But to farmers good roads are essential, not only for profit, but for their social life.

It may be said that an intelligent effort to secure good roads in this region ceased when railroads were constructed. The best roads now in this county are the old turnpikes, constructed by private enterprise sixty years ago. They were built to endure, and not to require repairs annually equal to the returns to the stockholders. Indeed, I sometimes think that making a good road is a lost art. The Romans built roads two thousand years ago that are still traveled, the foundations and even the surface paving remaining the same, but we can scarcely construct a road that will remain firm and dry a single winter. The North American Indians could raise mounds and build earthworks that have stood uninjured for centuries, while we, with all our science, can hardly produce a roadbed that will remain a year without requiring repairs.

It is not necessary to spend more money on our roads; we waste money and labor enough to cover our county with good roads in a few years. We need not wait for everybody to become a civil engineer any more than our savage predecessors needed an engineer to construct their enduring earthworks, a little thoughtfulness and a liberal admixture of common sense is all that is required. Macadam himself refused to be called an engineer, he claimed to be only a "road maker." An eminent painter was once asked, "What do you mix your paints with?" "With brains," was the reply. A little of the same mixture would revolutionize our methods in road making.

What is a good road?

1. It must have a practicable grade.
2. It must be dry.
3. It must be smooth.

Nothing else is required. To these aims every hour of labor, every cent of expense ought to contribute. All around us are thoroughfare roads that pay no heed to grades, they seem to have been first traveled by wild animals, then by Indians and then followed by our first settlers; as neither wild animals nor Indians carried anything to market they may be excused for their inattention to grades, but why should we accept the wild hog as a civil engineer? There are many places where our roads run over steep hills when it would have been but little farther to go around. For a hundred years and more, farmers have crawled over these ridges and knobs like ants crawling over a cheese, and I see no prospect of improvment for centuries to come. In some places a property line, in others the location of a house has been made to inflict an enormous tax, a consuming vexation and a continual nuisance upon the public. The road that runs in front of this building is practically level for twenty miles, except at one point where for a half mile in crossing a ridge there is a grade of probably ten feet to the hundred. This hill is a stricture upon the whole road. It limits the amount that may be hauled to Cincinnati to a load that may be taken up this grade that never ought to be tolerated. Nature had made the road level except at this point, where a little intelligent observation and a trifling expenditure would have made the hill harmless. The enormous tax levied by such grades is shown by the fact that on a grade of ten feet to the hundred a team can haul but one-fourth of a fair load for level ground.

Railroad companies do not neglect this feature. They dig down hills, fill up valleys and tunnel mountains to avoid steep grades. This is not because a locomotive cannot climb a hill, trains have been and are carried over grades of five hundred feet to the mile, but the increase in cost of operation forbids it. They find it wise to incur an initial cost of millions rather than an annual ruinous drain. Within sight of us at this time, a railroad company spent more than a hundred thousand dollars upon a half-mile of their track, cutting through a ridge at a grade of twenty-six feet to the mile, or six inches to a hundred feet. Crossing the same ridge the makers of the public highway did not seek the lowest point nor did they reduce the height by grading.

Any farmer can readily compute the tax levied upon him by steep grades if he will calculate the loss of one ton in each market load caused by ungraded hills. It is idle to say that better grades cannot be found. The law of Congress, passed about seventy years ago, directing the construction of the National road from Cumberland, Maryland, across the Allegheny mountains to Wheeling, allowed no grade of more than three feet to the hundred on the eastern slope, and not more than five feet to the hundred from the mountain crest westward. It is not probable that Southern Ohio requires heavier grades than the mountainous regions of Pennsylvania and Virginia. I am now speaking of thoroughfare roads; crossroads, neighborhood roads must be made within narrower limits, but there is no reason why any heavily traveled road in this county should have steeper grades than were required to cross the Allegheny mountains. There is no good reason why farmers should tax themselves and burden all the coming generations with roads that reduce by one-half or three-fourths the loads they may haul.

A good road must also be a dry road; it must be dry every day in the year, or it is not good. It is idle to say that this cannot be done. The sufficient reply is that it has been done, for many thousand miles of road. There are thousands of miles of roads in this country, that are always dry, free from both mud and dust, from the granite and asphalt streets of our cities to the well made macadam roads in the country. The ordinary clay road, when at the right moisture, is the best of all roads. It will bear up any load, it is smooth, it is elastic, it is pleasant to horse and man, not harmful to vehicles; if it were possible to keep it dry, the subject of roads would need no further consideration. In some portions of Ohio, and not the least intelligent portion, stone roads are not favored. The citizens tell us that their clay roads, properly drained, well rounded, kept in proper shape by "formers" made for the purpose, are the best roads in the world for ten months in the year, while we who pretend to have stone and gravel roads, do not have good roads for one day.

In road making and maintenance, water is the great enemy; it is indeed the great enemy of everything formed by the hand of man; it has ploughed out the valleys and ravines around us; it rounded the outlines of these hills; it changed this landscape from a dead level; it works year in and year out; thousands of tons fall each year on every mile of road; it is heavy—every pint weighs a pound—it falls from a great height; it smites the roads with great force; it dissolves and bears away every obstacle that resists it. Not only the vast quantity that falls in the road, but much that falls in the neighboring fields, must be discharged in the roadway. You will at once see that unless you have provided against water, both in the roadbed and on the surface, you have done nothing that will endure. Not more surely will your house be destroyed if it has a bad roof; not more surely will it fall if water undermines the foundation, than will your road be an expensive vexation and failure if you have not wisely planned to prevent the water from soaking into the roadbed or standing on the surface. It does not need citation of fact and argument to convince you that with us this simple, plain, common-sense rule is generally disregarded. Our roads are the proof; they alternate between mud and dust; they are never dry if there has been rain within two days to turn the dust into mud; if the rains cease for a week, the dust flies like desert clouds. On some of our most traveled roads, horse, driver and vehicle are converted to a uniform color, either by mud or dust. We have all had this experience.

The usual method of road drainage is by ditches. In some cases these are large enough to bury a team and wagon; in others, they are so filled up as to afford no drainage at all. In the former places, to get off the road is sure to bring an overturn; in the latter, the water stands and soaks into the road, or courses along in the roadway, carrying away the road metal and making a third gutter. The wosrt possible place for a gutter is the middle of the road.

Some day when our farmers have concluded to practice a wise economy, they will require gutters sufficient to carry off the water safely, but not large enough to make travel unsafe; and the time will come when they will have underdrains to prevent water accumulating in the roadbed, and to carry the storm water underground to the nearest natural water course. When drain tile can be had so cheaply as now, to make a job that will always protect the road and never need repairs, there is no reason why the matter should not be carefully considered.

Most of our stone roads are furrowed with ruts, and pockmarked with depressions that turn to mud holes with every shower. These are not caused by the wheels and hoofs digging up the surface; they are caused by allowing the water to accumulate below until the road metal sinks into the oozy mud. They are pretty sure signs that the drainage of the road is defective.

I have no time to discuss the proper method of making a road so as to protect it, top and bottom, from the assaults of its great enemy; but if I have set you thinking about it, then I am sure that a remedy and a right way will be found. For the present I can only say let the roadbed be crowned to send the water to the gutter as soon as it falls, by the shortest route; let the ditches be sufficient to carry it off, and protected so that they will not become dangerous by washing; let nothing on the surface impede or divert the water in its course to the gutter; do not tolerate ditches in the roadway; put on the road metal, not with a view to its bearing up the loads, but to make a water-tight roof over the road. It is a mistake—a very plain one—to suppose that stone or gravel is necessary to bear up the traffic; the plain fact is that the clay underneath must bear up everything, the road metal and the traffic; no load is so heavy that clay, when dry, will not carry it, and clay would be the better road material but for its capacity to absorb water.

A good road must be smooth. This is an essential quality, not simply because a smooth road is more pleasant, but because it is vastly more favorable to traffic as well as more durable. I mean, too, not simply that there shall be two smooth ruts for the wheels; I mean that the whole surface, length and breadth, shall be free from ridges, projections, or any roughness. Anyone who has seen two horses pull a loaded freight car along steel rails can begin to appreciate the value of smooth roads. The same team could not haul one-twentieth as much on our usual roads.

The pioneer corduroy roads were hardly worse than a large portion of our stone and gravel roads; such a road may be level, but it presents all the disadvantages of a steep grade; the load must be raised over every inequality. Besides, rough roads are hard on horses and vehicles, and exasperating to drivers; they become a torture to those who must ride over them. One wonders at the patience of our people under so needless an affliction; they seem to look upon it as they would upon an earthquake, a tornado, a bad harvest, or any other providential matter inscrutable and unavoidable, and therefore to be borne with apathy, philosophy or pious resignation. Nothing could be more untrue. Such roads are the result of human thoughtlessness or stupidity and may be remedied by attention and intelligence.

Granted a good roadbed, one free from water, the smoothness will depend upon the material used for the roof and the manner of its treatment. In our country we have an abundance of excellent materials for road making. Our hills are full of blue limestone, and the Miami river and its affluents and their valleys have inexhaustible gravel. The limestone from the quarries is the better material, but a good road may be made with gravel. As this material is used, however, it can never be a good road metal.

The custom is to haul out silt, sand, mold and gravel of all sizes up to four pounds and dump the mass in the road. Then the public is invited to pack it, using wagons and buggies for road rollers, and their horses' feet and legs for rammers. Such a practice can never make a durable or smooth road; the sand, silt and soil become dust or mud by turns; they make it impossible for the gravel to pack; the larger pieces of gravel can never be packed at all, for no smooth, rounded stone more than an inch in diameter can ever be permanently settled in a road. The result is a road ridged lengthwise, loose stones lying about everywhere, an uneven surface, and a sea of slushy mud after every rain. If gravel is to be used it should first be screened until the sand and silt are taken out, and then the gravel should be run through a stone crusher set to crush to an inch and a half in size. The material so obtained will give a good, smooth surface to the road, and in many places its economy will compensate for its inferiority to blue limestone. In some of our villages the wise road authorities have gravel and sand hauled and dumped on the streets during the summer and fall, and the resultant mud hauled away in the winter and spring. Meanwhile, the rock crusher, owned by the township, stands idle.

If stone is used the same rule must be applied. If anything has been settled by science, and the experience of a hundred years in all civilized countries, it is that no stone should be used in road making that will measure more than two inches in any dimension. No large stone for a foundation, unless set vertically as we have gutters, and then well rammed; no clay or sand, because they forever keep the broken stone from cementing. No "binder" except the lime in the stone. If you will give attention to the making of our stone roads, you will note that, not only is the crusher stored out of sight, but men are hired at thirty or forty cents per perch to break stone two or three times larger than standard size. No three-inch stone can ever make a smooth road; no road material dumped in a mass upon a road can ever make it smooth; no road opened to travel before the metal has been rolled and compacted can ever be smooth; no road can ever be smooth or compact if sand or clay is mixed with the material, and no gravel of all sizes dumped upon the highway can ever make a pleasant or economical road.

In a word: If your work is directed to securing a good grade, or to protecting your road from water within and without, or to securing a smooth surface, you are making permanent progress. If not so directed it is folly and waste.

RURAL FREE DELIVERY.

By Mrs. R. J. Brown, Morning Sun, O.

[Read at the Farmers' Institute, held at Camden, Preble County, March 2 and 3, 1898.]

All systems arranged by man for his own comfort and convenience, no matter how wisely planned or well carried out, are stamped with imperfection and incompleteness. Whatever improvements may have taken place, whatever progress has been made, still greater and better things are required and expected—growth, development and progress are but the natural results of an enlightened age; and it would seem that the sum of our wants or requirements becomes greater in proportion as intelligence increases.

It is a well known fact, however, that a reform in any system is not brought about in a day, but is usually a thing of slow growth.

As the necessity for changes arises, changes must come, yet so prone are we to cling to old habits and customs and so greatly are we influenced by prejudice, that an approaching sentiment is accepted cautiously and after some consideration.

The proposed reform in our postal service—viz., Rural Free Delivery, is a matter now being agitated by the people and tested experimentally by the order of Congress, and if made a permanent part of our system will be an advance step which must prove a benefit, not only to those living in agricultural districts, but to the nation at large.

The story of the postal service is one of the most interesting on the pages of history. The name originated from the posts placed at intervals along the roads of the Roman Empire where "messengers" were kept in readiness to bear dis-patches and intelligence, but these posts were never used for private correspondence

So far as can be learned the first letter post was established early in the thirteenth century on the continent of Europe between the Hanse Towns, a confederation of cities and towns, eighty-five in number, leagued together in a trade union for the purpose of protection against robbers.

The first postoffice was established in England under Charles I., and in 1635 Thomas Wilturings was authorized to run a post " night and day," between London and Edinburg, " to go thither and back again in six days." Two years later a monopoly of letter carrying was established which has continued through all subsequent regulations of the postoffice.

As time passed many improvements were made, but the rates of postage were so high that correspondence was limited to the few.

In 1837, Sir Roland Hill proposed a plan of reform, which revolutionized the whole system and greatly increased the utility of the postal service. The plan included a low and uniform rate of postage for all distances, based upon weight. Sir Roland was given to understand, in unmistakable terms, that his friends considered he had taken leave of his senses, yet in the face of all opposition, the measure gained popular favor and within three years from the time of its proposal, became a law.

In our own country's history we find that during the first presidential administration, Washington hardly thought the office of Postmaster General of sufficient importance to entitle its holder to a place in the cabinet. But the increased facilities for the transportation of the mail, the reduction of letter postage, the introduction of the postage stamp, the postal card and money order, have brought about a change so great that the postoffice department is now second to none in point of importance, and yet the system is not considered perfect.

It is claimed by many that since the mail service became a monopoly it has only partially performed the responsibilities assumed. This claim grows out of the fact that our postal system was derived from that of Great Britian, that the law passed by the Confederated States in 1782, authorizing the Postmaster General and his assistants to "carry" and "deliver letters," was based upon a decision made by the Court of Kings Bench in 1772, in a suit brought against a postmaster for the non-delivery of a letter. From the decision then given and the action of Congress in adopting the same system the conclusion has been drawn that the obligation to " deliver " letters as well as to " receive " and " carry " them was assumed by the government in taking upon itself a monopoly of the postal service.

When the free delivery of the mail in the larger cities was first proposed, the proposition was severely criticised, and bitterly opposed, the strongest objection, that of increased expense, being the same that is now made in regard to "rural delivery." However, in spite of all opposition free delivery was established in the larger cities in 1863.

Postmaster General Wanamaker said in 1892, in speaking of the inequalities of the postal service, that by the act of congress free mail delivery was granted only to the cities and larger towns, while the farmers and residents of rural districts, "paying the regulation rates of postage," are left to get their mail as best they can. He also said, "the system is colonial. It takes pay for delivering letters without delivering them."

In order to meet a growing desire for the extension of free delivery to rural districts, the Hon. U. D. Sperry, of Connecticut, introduced before the last Congress a bill "to revive the old penny post system in towns, villages and other places where no free delivery exists." The bill enacted that by the petition of twenty persons a postmaster "might appoint a carrier to deliver the mail of those petitioning and receive such compensation as might be mutually agreed upon," but where no agreement was made he should "demand and receive" a sum "not exceeding one cent for each letter" and package delivered.

In the discussion that followed the proposed bill it was shown that a number of communities in the eastern and southern states had already adopted a similar plan and that this bill was but the development into law of a system already existing in some places. The bill passed both houses but did not reach the president in time for his "consideration and approval."

Previous to the introduction of this bill before Congress, the subject of rural free delivery had been agitated to a considerable extent.

The movement had its enemies as well as friends. Strange to say opposition came largely from the farmer himself, who feared that the adoption of such a measure would greatly increase the expense without adding much to the revenue of the department.

But Congress, in order to test the matter experimentally, authorized the post office department to draw on the treasury to the amount of ten thousand dollars, a sum which later on was supplemented by thirty thousand dollars more.

The service was inaugurated in West Virginia October 1, 1896, and extended as rapidly as territory could be arranged, and up to October 1, 1897, the test had been made in twenty-nine states and over forty-four different routes. Congress asked that rural delivery should be thoroughly tested and an effort was made to comply with the request, for the reports show that all kinds and conditions of rural life were included among the territories selected.

The test has been made in California under conditions most favorable, in the midst of a stretch of "gardens, vineyards and orchards," where the seventy-five miles of macadamized roads, traversed daily, lead by a "succession of costly mansions."

In Arizona it has been put in operation under conditions almost as favorable, where the carriers have before them a "perpetual vision of beauty" in productive farms and in widespread orchards where,

"The spirit of the gale
Breathes on fruits untaught to fail."

It has been inaugurated in the sugar growing belt of Louisiana where the navigable Bayou LaFourche, is lined on either bank with sugar plantations, houses, refineries, the homes of the wealthy planters and their employees and plantation stores—practically forming a street seven miles in length.

The test has been successfully made beneath the balmy skies of Georgia, the "empire state of the south," where the roads are good all the year round, "even after the heavest rain."

The experiment was also made in the thickly populated, intelligent, farming communities of Genesee county, New York, and Lancaster county, Pennsylvania. The latter claiming the distinction of having almost one hundred and fifty fourth class postoffices.

But the service has not been confined to localities where there were no difficulties to encounter, for routes were selected where it seemed almost impossible for the carriers to do their work. Over the foothills of the mountainous regions of Arkansas, through the heavy roads of central Illinois, and the unsurveyed, roadless regions of Kentucky; over the hilly, snow filled thoroughfares of Michigan; among the rocky regions of Pennsylvania's hills, and down through the sparsely settled portions of West Virginia, between the mountain ranges where the carriers have to cross farms in their routes.

The mode of transportation was governed by the physical conditions of the territory traversed. In many instances it was necessary to lay down bars and pass through fields in order to deliver and collect the mail, yet in no case was this considered an invasion of rights, but the community served co-operated willingly with the carriers in forwarding their work.

In examining the reports given of Rural Free Delivery from each state, we find that those having the privilege of the system are enthusiastic in its praise. In many instances, so soon as the people realized the advantage, petitions were sent in from other townships asking the extension of the service—and without a single exception, where Rural Delivery has been tested, its continuance has been asked.

Some communities have reported themselves as ready to assume the expense of the carriers rather than go back to the old way. Two townships have expressed their willingness to pay additional postage, for additional transportation charges, if necessary.

The amount of mail taken has been greatly increased, in several cases more than doubled. One carrier in New York now delivers one hundred and fifty daily papers where, formerly, scarcely any were taken. The experiment, has encountered some difficulties even under conditions most favorable.

The question of the net cost of delivery has been met at nearly every test station by the same consideration, that of discontinuing other service now in use, with which rural delivery conflicts.

So long as the system remains an experiment, it has been thought best by Congress to move slowly, not abolishing any service which, in case the test prove a failure, might have to be resumed. Should the new departure become a permanent part of the postal service, many fourth class postoffices will be discontinued and star routes dispensed with. So, from a pecuniary standpoint, the experiment cannot be said to be a fair one.

Another difficulty comes from the people themselves, who, so long as there is no assurance that the service is to be permanent, are loth to set aside the old custom of riding to town after the mail.

Again, the postmasters who are paid according to the number of stamps canceled, strongly object to transferring any of their patrons to a free delivery route.

Yet in spite of all difficulties and objections, much has been accomplished, and the results obtained suggest the feasibility of making rural free delivery a permanent feature of the postal system of the United States, not immediately nor in all places at once, but in some gradual form.

In his report, the First Assistant Postmaster General, Perry S. Heath, says:

"The reports prove conclusively that this experimental service has rendered benefits far in excess of the expenditures involved, and that under wise restriction, it can be continued and extended with great advantage to the agricultural class, and without serious detriment to the revenue."

PROCEEDINGS

OF THE

STATE FARMERS' INSTITUTE,

Held in the Board of Trade Auditorium, Columbus, Ohio, Tuesday and Wednesday, January 11th and 12th, 1898.

The State Farmers' Institute for the year 1898 met in Annual Convention at the Board of Trade Auditorium, Columbus, Ohio, Tuesday, January 11, 1898, at 10 o'clock A. M.

In calling the convention to order Hon. Wells W. Miller, Secretary of the Ohio State Board of Agriculture, said:

GENTLEMEN: On behalf of the State Board of Agriculture I bid you welcome—a most hearty welcome—to your own, the State Farmers' Institute of Ohio. I congratulate you on the number in attendance this morning, considering the conditions that surround the Capital City of the State at this time.

The State Board of Agriculture has made an earnest effort to prepare an interesting and profitable program for your discussion and appreciation, and I believe it will be appreciated. I think that the good attendance this morning, considering the conditions, insures us a very large attendance before the close of this State Farmers' Institute. I hope that you will receive great benefit and profit from this gathering. It affords me peculiar pleasure this morning to introduce to you your President, selected by the State Farmers' Institute last year, Mr. O. E. Bradfute, of Cedarville, Ohio, who, as your presiding officer, will now take charge of the meeting. (Applause.)

ADDRESS BY PRESIDENT O. E. BRADFUTE.

Gentlemen of the State Farmers' Institute:

It is not my purpose at this time to deliver a set address nor a lengthy one. However, I cannot refrain from saying a few words.

There is certainly much reason for gratification to those who have been greatly interested in this State Institute that each year the meetings are better attended than before, and more and more interest is being taken in them. It has passed the experimental age and is today regarded as it should be, the leading Institute of the state and worthy of the best thought of our best farmers and stockmen. There are two things that should add very greatly to the attendance and interest this year, viz.; the reduced rates on the railroads and the discontinuing of all other farmers institutes throughout the state, thereby giving all institute goers and workers the opportunity to attend. So many workers in a common cause ought indeed to make this meeting a successful and a model one. The devoting of one entire session of this state meeting to a discussion of farmers' institute problems is, I think, wise and proper. There is yet much to be learned as to the very best manner of conducting these meetings throughout the state. They are certainly the means of much good to the farmers in general, but it is still a question whether they have yet reached their highest degree of usefulness. Our farmers are fast learning that better methods are necessary, and there never was a time when they really appreciated information as now. They are just beginning to discover that, as a class, they have been farming too much and thinking and figuring too little. The past few years of hard times may, after all, prove a blessing. We have been set to thinking and figuring.

Never before, at least in recent years, has the farmer been considered of so great importance in the prosperity of the country as now. Never before have all others so completely admitted their dependence upon him, Never before has so much interest been taken in the farmer by dwellers in the cities as now. Facts concerning his growing crops are matters of most earnest solicitude by dwellers of the towns and cities. As citizens of a great nation we have come to recognize our dependence upon each other as never before, and we grasp more fully the meaning of the brotherhood of man. Agriculture is the sheet anchor of American prosperity and all other industries are moored to it.

Old methods on the farm no longer succeed and the hard times have forced that fact upon us as nothing else could, and compelled us to adopt new plans and ideas. The farmer of today is a student in the full sense of the word. We have been compelled to lay aside the ax and the hoe and to spend more time in reading and thinking. The farmers' institute has proven an excellent school room for the exchange of ideas, and much valuable information has been thus disseminated. There is yet much to be learned. American agriculture is yet in its infancy. We boast of our greatness as an agricultural nation, and that we are able to feed the world, but our greatness is more in quantity than in quality. We have made great efforts to feed the world, it is true, but we have been too busy to stop and ask it how it likes its food, or to inquire why so much of that world prefers to buy its food of some other producer, even at a greater cost. Would we not find it better to cater to tastes already acquired than to undertake to cultivate new tastes?

Pardon me, brother farmers, but have we not been a little egotistical in regard to much of our farming? Our products do not stand in the markets of the world as they should. How few of them bring the top prices in such markets. Our beef, our pork, our mutton, our dairy products—none of them bring the highest price in the great markets of the world.

We complain that we cannot produce beef at a profit on our high priced eastern land, yet our English cousins produce it at a profit, on land that will rent for three, four, yes, ten times as much per acre as will ours. We boast of the best hog in the world, and yet we cannot get over six and one-half to eight cents per pound for our bacon in the English markets, while the Canadians, the Danish and the English receive from eleven to seventeen cents per pound for theirs in the same markets.

We complain that we cannot make butter and cheese at a profit, yet the people of the channel islands make money from such products and do so on land that rents at from fifty dollars to seventy-five dollars per acre.

When it comes to mutton, we are simply flat failures compared with the English, and yet they succeed on land several times more valuable than ours and have no tariff on the wool to help them out.

We tire of growing potatoes for profit, while the people of the Isle of Jersey prosper growing them on land for which they sometimes pay a yearly rental of from two hundred dollars to three hundred dollars per acre.

We might enumerate many more like instances, but enough has been said to at least suggest the broadness of the field there is yet left for the work of the farmers' institute.

Let us hope that the three days' discussion of the subjects on the program before us may be the means of bearing much fruit for the bettering of the conditions of the farmer.

The program as prepared by the Secretary of the State Board of Agriculture seems to me to be especially complete this year, in that it covers almost every branch of our profession. These subjects are all to be handled by able specialists. There will likely be a short time for general discussion after each address. I trust that no time may be lost but that you will be prompt in the discussion of each subject, and that your remarks may be brief, pointed and practical, and apply strictly to the subject under discussion.

At the conclusion of his address President Bradfute said:

If there is no general or miscellaneous business to come before us at this time, we will proceed at once with the regular program. I will delay the anouncement of committees, which I believe it is customary for the Chairman to appoint, until perhaps just before our noon adjournment, when we hope to have a still larger audience.

The first thing on the regular program is an address—The work of the Ohio Agricultural Experiment Station—by a man whom we all know, and a man whom I will guarantee, you will all be interested in hearing. I now have the pleasure as well as the honor of presenting to you Prof. C. E. Thorne.

THE WORK OF THE OHIO AGRICULTURAL EXPERIMENT STATION.

By C. E. THORNE, Director Agricultural Experiment Station, Wooster, Ohio.

The Ohio Agricultural Experiment Station was established by an act of the State Legislature, passed in the spring of 1882. It has therefore been in existence nearly sixteen years. During the first six years of this period the Station's resources were comparatively meager. Its support was derived from annual appropriations from the State Legislature and the total sum thus appropriated for the six years was twenty-seven thousand four hundred and fifty dollars or four thousand five hundred and seventy-five dollars per annum. The Station occupied during this period about twenty-five acres of the farm belonging to the State University and its work was directed by the Professors of Horticulture and Agriculture in the University, but only one member of its staff—the Superintendent of Field Experiments—gave his entire time to the Station's work.

Considering the circumstances, a surprising amount of work was accomplished, however, and it was done in such a manner as to gain the confidence of the farmers and horticulturists of the state. But for the careful, conscientious methods followed during this period it would have been very difficult, if not impossible, to have expanded and carried forward the work under the greater resources afforded by the National experiment station law as has been done.

If we turn to the first annual report of the Station we find that its first experiments were in the comparison of varieties of wheat, and this work has been continued without interruption from that date forward. In fact, this work had been begun on the University farm, in a small way, as early as 1878, so that the harvest of 1897 gives us a continuous record, for a few varieties of over twenty seasons, and of a larger list for sixteen years, while most of the differently named sorts of wheat which have been brought prominently before the notice of Ohio farmers during this period have been subjected to comparative tests for a period sufficiently long and under such conditions as to fairly test their relative value.

The outcome of this test has been to show an average yield of two to four bushels per acre for several varieties in excess of that of the old and deservedly popular Mediterranean and Fultz. But an increase of a single bushel to the acre in Ohio's wheat yield would mean, at eighty cents per bushel, about two million dollars added annually to the income of the farmers.

There is a class of persons, some of whom are engaged in experiment station work, who attempt to decry such work as variety testing, as being crude in its nature and altogether beneath the notice of the scientist, and contend that the Stations should leave such work to the farmer and occupy themselves with investigation of "fundamental principles." Those in charge of the Ohio Station have believed, however, that it is the Station's business to help the farmer in whatever way it may most quickly and effectively render aid, and they have believed that, under existing conditions, our Ohio farmers will profit by the help which this variety test offers them much more quickly and effectively than they will by any abstract laboratory investigation.

Experiments with varieties of oats and corn follow in the first report, and to these must be added cultural experiments—quantity of seed, methods of cultivation, etc.—some of which were begun that first year or earlier and others at more recent dates, and from which valuable results have been obtained. None of these is more interesting than the one in deep, as against surface, cultivation of corn, a test which has been carried over four seasons and gives an average increase for shallow culture (less than three inches) of six bushels per acre, over the yield from corn cultivated with the ordinary double shovel. But an increase of only two bushels per acre on Ohio's cornfields means a million dollars, with corn at twenty cents per bushel.

During the first year of its existence the Station began experiments in the feeding of animals, and these have been continued from that time forward. In fact, this line of work, like that in variety testing of cereals, had been commenced by the Farm Department of the University, before the establishment of the Station and has also been continued by the department since.

These tests have added definitely to our knowledge respecting the feeding value of field beets, and have confirmed the conclusions of the chemist, that the value of watery foods is measured by the dry substance of the food. They have also given us a more definite basis of comparison than any before attained respecting the relative food costs of beef and butter, besides shedding light upon a few other points in the great problem of animal nutrition.

This work with animals has been recently extended to include a comparison of breeds, a work which must be carried over a long period of time and must be made to include a large number of individuals before definite results can be attained.

In past years some of the diseases of animals have received attention, and this problem has again been taken up in the study of bovine tuberculosis, a disease, the wide prevalence and vast importance of which is only just beginning to be recognized.

Horticultural work was begun by the Station during its first year in the testing of varieties and methods of culture of fruits and vegetables, and this also has been continued.

In this work, as in the field work, the testing of varieties has occupied a prominent place. It is a much more difficult matter, however, to make a just comparison between varieties of fruits and vegetables than between grains; for while the chief differences between the latter may be estimated by weights and measurements, in the case of horticultural products the less tangible elements of taste and appearance occupy a relatively important position in determining values. In short, variety testing can only seem a simple matter to one who has never attempted it, or who lacks the qualifications necessary to the making of a trustworthy test, qualifications different perhaps, but not more common than those which are required in the most elaborate investigations of the laboratory.

In this work the Station has endeavored to be among the first to test new sorts, and it has had the cordial co-operation of honest originators of new varieties, who have quite generally adopted the practice of sending promising new sorts to the experiment stations for a preliminary test, before putting them on the market. These tests are preventing the introduction of varieties in which the results obtained in a special locality and under, perhaps, a biased management, are not supported by a wider test, made in disinterested comparison with standard sorts; while, on the other hand, unusual merit is more quickly and more decisively shown than is possible under any other method of comparison.

The dishonest exploiter of new sorts, or of old sorts renamed, whose only object is to reap as large a harvest as possible out of a gullible public, before his rascality can be detected, has, of course, no use for the help which the Experiment Station offers, and the vender of "Bohemian" oats or "Red Beauty" wheat gives the Station always a wide berth. We have no means of estimating the amount of money spent by Ohio farmers annually in the purchase of worthless new varieties of grains and fruits, or of valuable but common old varieties, renamed and sold at exorbitant prices; but judging from the persistency with which such sorts are advertised the sum must amount to many times the annual cost of the Experiment Station. All this waste the Station is able and ready to save the farmer.

Cultural problems have received attention in the horticultural as well as in the agricultural department of the Ohio Station, and its work has distinctly extended the boundaries of our knowledge with reference to the effect of transplanting onions and the use of sub-irrigation in greenhouses, while many contributions of minor importance have been made to the solution of other problems of the gardener and fruit grower.

During the first year of its existence, our Station began the study of the insect pests of the farm, garden and orchard, and this work has been continued, with but slight interruption, from that time forward. In addition to the suggestions for the control of insects, which are published in the frequent bulletins issued by this department of the Station, and are given in the one thousand to two thousand letters, which are written each year in reply to inquiries regarding insects, parts of the state where injurious insect outbreaks occur are personally visited and the methods for their control are studied on the ground.

As a further illustration of the Station's methods, it may be stated that when it was learned that the chinch bug had made its appearance in Southern Ohio, in 1896, the Entomologist at once began the preparation and distribution of a parasitic fungus, which, under favoring conditions of weather, has been found in the Western States to be a very effective destroyer of this pest, and we have reason to believe that it accomplished the same useful work in Ohio.

Another illustration: On December 19, 1894, our Entomologist received a letter from Clermont county, which enclosed a twig on which were specimens of a minute scale insect. This was immediately recognized as the San Jose scale, an insect hitherto unknown in Ohio, but which has caused immense losses to the fruit growers of the Pacific coast. The next morning the Entomologist was in the orchard from which this twig had been sent; he learned from what nursery the trees had been purchased and immediately warned the fruit growers of the state, through the daily press, of the dangerous foe which was in their midst.

During the three seasons which have followed the discovery of this insect it has been located at thirty-two points in the state, and is known to be similarly distributed over many if not all the states east of the Rocky Mountains. It has been spread through this region primarily from two or three nurseries in New Jersey and Long Island, into which it had been introduced from California, probably about ten years ago.

Had it been detected in these nurseries immediately upon its introduction it might have been suppressed at an insignificant cost, but it has now become so widely scattered that its complete extermination is probably impossible; if accomplished at all it must be done at enormous cost.

What might have been accomplished a few years ago, with reference to the San Jose scale, it is not too late to do with other similar pests, however, and this lesson should show us the necessity for systematic inspection of all commercial products liable to adulteration, or to become agencies for the transmission of disease or of insect or fungous pests.

Such inspection, however, does not come within the legitimate work of an experiment station, except as it may in some cases lend incidental assistance to the Station's investigations. In Ohio the tendency has been to separate the work of inspection and control from that of investigation proper, as shown in the separate provisions for state inspection of fertilizers, for control of epizootic diseases, and for prevention of adulteration of dairy and food products, all of which lines of police duty are in some states assigned to the experiment stations. There are certain advantages, it is true, in centralizing work of this character. It can be conducted at less expense, and in such work as the control of injurious insects and plant diseases the need of the services of the expert entomologist and vegetable pathologist is urgent. This need has already been recognized by the legislature in the law providing for the control of black knot, peach yellows and San Jose scale, in which law the Station experts are made the final referees in case of dispute.

No branch of the Station's work has yielded results of greater immediate value to the people than its study of the fungous diseases of plants and especially of the apple scab. Eight years ago this work was begun. At first the results were frequently negative or indefinite, but the work was persistently continued. Methods were modified, new appliances were tried and weather conditions studied. The question was approached from the standpoint of the commercial orchardist, and his conditions and circumstances were kept constantly in view, and we are ready now to assert that it is possible to secure a crop of apples in Ohio with each returning season, with almost the same certainty that a crop of corn or wheat may be secured —the only special danger to the apple crop being its greater risk from untimely frost. But we also believe that the day is forever past when the apple tree will ask for nothing but standing room in Ohio, as it did in the days of the pioneer. It must have its due share of intelligent care and attention.

The statistics of Ohio's apple crops show an average annual yield of nearly fifteen million bushels for the fifteen years, 1867 to 1881, inclusive, against but little over ten million bushels for the thirteen years next following, a loss of more than four and a half million bushels in the annual product. This, however, tells only a part of the story, for the yield during this last period has fallen from an average of thirteen million bushels for the first five years to five and a quarter million bushels for the five years ending with 1894. The great crop of 1896 would change these figures somewhat, but it is evident that unless something is done the apple will soon be a lost product in Ohio. But in the orchards where the lessons taught by our experiments are being applied the production of apples is steadily increasing. The problem in the Station orchard is now to prevent overbearing, while neighboring, untreated orchards are producing less than half crops of inferior fruit.

It is possible that the average of Ohio's orchards is greater now than it was thirty years ago. The assessors' returns give an average total of three hundred and fifty-seven thousand acres in orchard for the five years, 1867-71, against three hundred and eighty-one thousand acres for the five years, 1890-94, but a great many acres of orchard have been planted in Ohio during this period—probably a great many more acres than are accounted for in the twenty-four thousand acres of increase shown by these statistics.

Whatever allowance be made for increasing age, for lack of manuring, care and cultivation, and for the depredation of insect pests, no one who has carefully studied the nature and habits of the apple scab can doubt that it has been the main factor in reducing the yields of our orchards, and that its destructive work is costing the farmers of the state many hundreds of thousands of dollars each year.

In his report as Vegetable Pathologist of the United States Department of Agriculture for 1887, Prof. F. Lampson Scribner states that A. J. Hammond, Secretary of the Illinois Horticultural Society, estimates the annual loss to fruit growers of Illinois from apple scab, at four hundred thousand dollars; that Secretary Goodman, of the Missouri Horticultural Society, estimates the loss from the same trouble in his state at half the crop; Secretary Brackett, of Kansas, places the loss in that state at one-fourth the crop, and W. H. Ragan, Secretary of the American Pomological Society, places the loss in Indiana at one-sixth the crop.

These estimates were made ten years ago. The average destruction from this pest has undoubtedly much increased in Ohio since that time.

Other fungous diseases of fruits, as well as the scab, are yielding to treatment. The efficiency of copper sulphate in controlling the black rot of the grape was demonstrated years ago, and later work is giving good ground for the expectation that the peach curl fungous and several of the fruit rots, especially of the plum and peach, may be brought under subjection. In this work our Station is taking an active part, and the results of its work are already in evidence.

The culture of cucumbers for pickling has become an important industry in some sections of Ohio; so important that the pickle growers of Wayne county alone, suffered last year a loss of not less than forty thousand dollars from the destruction of their crop by another member of the insidious tribe of fungi—the downy mildew—which has been creeping westward from the Atlantic states for several years. We have not yet had experience enough to say positively that we can control this blight, but preliminary experiments are very encouraging, and we have full confidence that we shall have dominion over it.

In the case of similar diseases affecting our cereal crops—the smuts of wheat and oats—we have been able to stop their work absolutely and at once, producing crops free from disease, though sown with seed from crops nearly one-half of which had smutted, and at cost for treatment insignificant as compared with the results attained.

Ohio produces annually about thirty-five million bushels of wheat, and twenty-five million bushels of oats. The loss from smut varies with the season, but taking both the smut which affects the wheat and the smut of oats, the average annual loss cannot fall far below five hundred thousand dollars, and in some seasons very largely exceeds this sum. Our experiments thus far indicate that, in the case of oats at least, the cost of treatment for smut may be repaid in the increase of crop, over and above what can be ascribed to smut alone. It is probable that apple scab annually robs the fruit growers of Ohio of a million dollars, and that the combined losses from other fungous diseases amount to a still greater sum.

Another illustration of the way in which the Station may help the farmer is given in the tests of sugar beets, which have just been concluded. Believing that the production of beet sugar is possible in the United States, the National Secretary of Agriculture furnished sugar beet seed last spring for distribution throughout the northern states. In Ohio, the distribution was made by the Secretary of the State Board of Agriculture; the beets were cultivated by farmers all over the state, thus bringing to bear the influence of our varied soil and climate, and in the fall more than six hundred samples of the crops produced, grown in fifty-nine counties, were analyzed by the Experiment Station.

The result of these analyses will be to point out definitely those regions of the state in which the production of beet sugar may be entered upon with reasonable prospect of success, whereas without them the whole business must have been but a leap in the dark.

The lines of work thus far indicated are some of those in which aid may be most quickly given to the farmers or fruit growers. There are other problems, however, which cannot be settled by the experiments of a single season, nor a few seasons only, and among the most prominent are those which relate to the maintenance of the fertility of the soil. Some of these problems were among the earliest of those attacked by the Staton under its first organization. The work was extended under the greater facilities afforded by the Hatch act, and was still further extended upon the removal of the Station to Wayne county.

In a state having such a diversity of soil as has Ohio, the study of this question cannot be confined to any single farm, if it is to produce results of general application. This was fully realized when these investigations were first extended under the Hatch organization, and attempts were made to enlarge their scope through co-operative experiments, made by farmers in different parts of the state but it was soon found that, while all such experiments were helpful toward the solution of the general problem, there was lacking that fixity of plan and persistence of endeavor, that is so absolutely essential to the highest success in work of this character.

In the work performed immediately under our own observation it was soon learned that the results of one season may be reversed by those of the next, owing to the difference of rainfall and temperature, or inequalities of soil, and that while every experiment, if carefully made, offers some suggestions of value, the best results can only be attained when the work is carried on under a comprehensive plan and over a considerable period of time.

For this reason, the Station, several years ago, entered upon the policy of establishing a few sub-stations, or more properly, test farms, on representative soils in different parts of the state, leasing land for this purpose and conducting tests under its immediate supervision, through superintendents, whose salaries were made contingent, not at all upon the value of the crops produced, but altogether upon the care with which the experiments were carried out; experience having demonstrated that it is sometimes difficult for the farmer, whose income is dependent upon the value of his crops, to see that the value of an experiment may be indefinitely greater than that of the crops produced in making it.

Two farms have been leased for this purpose, one of forty acres in the "oak openings" region of Fulton, Henry and Lucas counties, the soil under experiment being a sterile, yellow sand; and one of one hundred acres in Strongsville, the southwestern township of Cuyahoga county, the soil being the thin white clay, characteristic of a considerable area in the Western Reserve. In addition to these tracts, the Station is continuing the work begun in 1888 on the farm of the State University, in co-operation with the agricultural department of that institution, and it is also conducting a test in the continuous culture of corn, begun the same year, on the so-called "slaty points" of Columbiana county, the soil of which is but a few inches in depth, lying upon loosely stratified shales. The tests just referred to are of course additional to the work instituted on the main farm of the Station at the time of its permanent location in Wayne county. In these five localities the Station now has under observation nearly nine hundred plots of land, chiefly one-tenth of an acre in size. The land for this work has been selected with the utmost care to secure uniformity in each of the different tests, and the greater portion of it has been underdrained with lines of tile, laid thirty-six feet apart, more than seventeen miles of tile drain having been constructed for this purpose alone, while in the preparation for variety testing and other lines of work about fifteen miles additional have been laid.

In this study, of fertility maintenance, standard commercial carriers of the chief constituents of fertility are used, singly or in combination, on crops grown continuously on the same land and in rotation, the effort being to discover what chemical elements are deficient in soils of different nature, and in what carriers or compounds these elements may be most economically returned to the soil. In comparison with these commercial or chemical fertilizers the manure of the stable and barnyard is being used, and this material is being treated in different ways, in order to learn how best to preserve and use it.

Under this system of tests we are studying not only different soils but also the feeding habits of different crops, and by means of the duplications of the same test on different soils we are in some cases able to obtain definite replies to our questions in a much shorter time than would be possible were all the work confined to a single farm.

To illustrate: A five-crop rotation of corn, oats, wheat, clover and timothy is duplicated on both the Wooster and Strongsville farms, the plots of the same number receiving the same treatment in both tests. Thus far no marked difference in the requirements of the two soils has been observed, and we already have twenty-six crops from which to draw conclusions, while, as soon as the first full rotation shall have been completed, the number of crops will increase at the rate of ten per cent. each year, barring accident or total destruction of crops by unfavorable seasons. In like manner we have a three-crop rotation of potatoes, wheat and clover in progress on the same two farms and on the sandy land farm in addition, while the cereals are being grown in continuous culture at Columbus and Wooster. When our present system is in full operation we shall have a total of thirty-seven crops each year under observation growing on about seventy-three acres of land, each test being repeated at least once, and in most cases several times, while the more important tests occupy in the aggregate several acres each.

I think that it will be freely admitted that a test of this description is incomparably more valuable than one conducted on a single soil. If a given method of treatment produces similar results on soils of such widely different character as those included in this test we may safely conclude that the method is one of general application. If the results do not agree, then we must study farther into the cause of the disagreement.

Our test, though already established on a broader foundation than any other similar test in the world of which I have any knowledge, is still defective in that it does not include at least two other localities in the state, one in the southeastern and one in the southwestern quarter. Although all the western part of the state is covered with the glacial drift, we have reason to suspect that there are peculiarities in the region overlying the Cincinnati limestone and more or less modified by the underlying rock, and also in some of the non-drifted soils of the coal measures, which will require a special study before our knowledge of the soils of the state shall be even approximately correct. If there were no other reason for this study, the difference of climate between the various sections would be ample justification for extending the work, for unquestionably this difference of climate is an important factor in determining the yield of crops.

For example: A study of the statistics of Ohio's wheat crops shows that the southern section has stood still or even retrograded in yield per acre since 1850, whereas the northern third of the state shows a decided increase.

It will be realized that this study of the soil is one which will yield results slowly and must have years for its work. The great Rothamsted experiments have now been in progress for more than fifty years, but so far are they from completion that Sir John B. Lawes has set aside an endowment of half a million dollars for their perpetual continuance. We hope to have useful results from our work long before fifty years have expired. Indeed, we believe that, by our system of repeated tests, the time may be reduced, with certain limitations, in inverse ratio to the multiplication of tests; in other words, that five tests made on five different soils, will give in ten years even more trustworthy results than a single test can give in fifty years. It must be borne in mind, however, that climatic changes constitute an important factor in this work, and these changes apparently move in cycles of ten years or more.

Some results of value have been already reached, however. Our tests are showing conclusively that we cannot hope to recover in the average increase of cereal crops the entire amount of nitrogen, phosphoric acid and potash which we may apply to the soil in a fertilizer, but that if such recovery is to be made, it must be through the growth in rotation with cereals of crops which have a greater feeding capacity than they.

These tests are also showing that farmers may effect a very material reduction in the cost of their fertilizers by purchasing for cash and in quantity the materials of which these fertilizers are made and mixing them at home, or even by employing the fertilizer manufacturer to mix the materials for them. Our investigation shows that the farmers of Ohio are paying from five dollars to ten dollars per ton for factory mixed fertilizers (not including the plain superphosphates) over and above the necessary cost for materials and mixing of fertilizers of equivalent composition and equal effect. Of course the claim is made for the so-called fertilizer manufacturers that their methods of mixing give special value to their product; but the tests of our Station, in which various brands of factory-mixed fertilizers are used along side of farm-mixed fertilizers of equivalent composition, are altogether failing to support this claim.

Ohio farmers are annually paying out about a million and a quarter dollars of their all too scanty earnings in the purchase of commercial fertilizers. Admitting that these fertilizers are being used with economy, the Station's work shows that fully one-fifth of the vast sum expended in their purchase may be saved to the farmer without reduction in the quantity or effectiveness of his fertilizer.

The fertilizer dealers have of course always been glad to sell for a lower price for cash and in quantity than on time, and at retail; but the fact remains that the reduction which the ordinary farmer was able to obtain in this way was comparatively insignificant, until he learned that it was not necessary that his fertilizing materials should first be manipulated by the factory mixer, and this knowledge he obtained through the Experiment Station.

Other experiments under way are demonstrating the loss which barnyard manure suffers through improper management. There can be little doubt that the farmers of the State are needlessly wasting material in this way which would have as great or greater value in the maintenance of the fertility of their land than the fertilizers for which they are annually paying out more than a million dollars.

The Census of 1890 gives an etimated value to Ohio's agricultural products, for the census year, of one hundred and thirty-three million dollars, while the total value of her mineral products was placed at twenty-six million dollars. In other words, the value of the annual product of Ohio's fields, orchards and gardens is more than five times that of the combined value of the annual yield of her mines of coal and iron, her quarries of stone and her wells of oil and gas. The same census shows that the capital invested in Ohio's farms, with their buildings, fences, implements and live stock, amounts to almost one billion, two hundred million dollars, or three times the total capital invested in all the manufacturing industries of the state.

The Ohio Statistical report for 1895 shows that there were in that year twelve thousand three hundred and seventy-eight miles of railway in the State, including main track and sidings, the whole being valued for taxation at one hundred and five million, eight hundred and forty-nine thousand, three hundred and ninety dollars. The annual product of Ohio's farms is therefore worth more than the total value of all her railways.

All these comparisons fade into insignificance, however, when we remember that all terrestrial life is dependent ultimately upon the soil, and that upon the maintenance of the fertility of the soil depends the very existence of the race.

In conclusion: The Ohio Experiment Station is but one of forty-five similar stations in the United States, and these are but a part of a world-wide system of agricultural research which includes every civilized nation. It has been the policy of the Ohio Station to confine its work chiefly to the elucidation of the discoveries which modern science is laying at our feet, rather than to attempt extensive original research; believing that, at the present stage of this work, there is greater need of showing farmers how to use the discoveries already made than of pushing forward the work of pure research. Nevertheless, we believe that the Ohio Station has done its fair share of original work; in fact, all experience has shown that the translation of the discoveries of the scientist into the terms of actual practice is quite as important a work, and one requiring perhaps originality of as high a degree, but of a different sort, as the original discovery.

Following this general plan, the Ohio Station's work has dealt chiefly with the following problems:

1. The comparison of varieties and so-called varieties of cereals, forage crops, fruits and vegetables.
2. Methods of seeding and cultivation.
3. The feeding of animals for the production of meat, milk and butter.
4. Comparison of different breeds of animals.
5. Investigation of certain diseases of animals.
6. Study of the habits and methods of control of injurious insects.
7. Investigation of the fungous diseases of plants and experiments in their prevention.
8. The investigation of new lines of agricultural industry, such as the production of beet sugar.
9. The study of various fertilizing materials, in order to assist the farmer in the purchase and use of such materials.

Finally: All the various lines of investigation in the rotation of crops, the treatment of the soil, the use of fertilizers and manures, the preservation of manures and the feeding of animals are part of a great experiment, in which the entire farm is included and in which is being studied, not only the general problem of fertility maintenance, but the special problem of so managing an Ohio farm, under the special conditions of Ohio's soils, climate and markets, as most economically to not only maintain, but to increase its fertility. To this end, the farm is being stocked to the full capacity of its summer pastures, and experiments are being constantly made in the growth of forage crops, in order to supplement the pastures, and in the production, conservation and use of manure.

President Bradfute: I know we have all enjoyed this admirable address. We certainly are glad to know more of the work that is being done by the Ohio Agricultural Experiment Station. There is no provision in the regular program for the discussion of this question. But I presume it would not be out of order, if any one has any questions to ask and have answered by Director Thorne, in regard to the work that is being carried on, to now do so. If you have any questions that he can answer briefly, we will now hear them.

Professor W. A. Kellerman of the Ohio State University: Mr. President, I am especially interested in this paper, because for many years I was an official connected with one of the experiment stations. And, although my business primarily is now the teaching of students in the State University, I still do a little experimental work and am deeply interested in the subject. The President seems to have limited the discussion strictly to the asking of questions. Therefore, I am sorry that I cannot make two or three remarks which I would like very much to make in this connection.

Dr. W. I. Chamberlain of Hudson: I move that the gentleman be permitted to make any remarks which he may desire. (Motion seconded.)

President Bradfute: I think a motion is unnecessary for I know we would all be glad to hear from Professor Kellerman upon this topic. We cannot give you a great deal of time, but we would be pleased to now hear from Professor Kellerman of the Ohio State University.

Professor Kellerman: I will be very brief. I simply want to emphasize a point that Professor Thorne made in the latter part of his address and then I will ask the question which I have in mind. He referred to the main purpose of the Experiment Station here in this State as not being that of original research, although, of course he mentioned that it was being carried on to a certain extent. That is the point that I wish to make a remark concerning. Suppose that every station in the United States and in Germany, if you please, and all over the world, made their special purpose and object not the advancement of knowledge—not original research—but simply applying the knowledge and bringing it home to the farmer, which had originally been sought out. Then in what a narrow and peculiar position would we soon find ourselves. I know how valuable this work being conducted by the Experiment Station is, but at the same time original research is equally important. For in what way would original research be of advantage to the farmer unless it was translated into common terms and brought home to him for his individual use and advancment? But suppose you prosecute the work only in the one line, and suppose that one line be the line suggested by Professor Thorne, then how long would the advancement in this work continue? I say that original research must have as wide a domain and as ample attention as the application of the knowledge to practical farming after the knowledge is obtained. That is the point I would make.

The suggestion that came to my mind is this: That certain stations of the United States more favorably situated for doing original research work might be called upon to advance knowledge and other stations to apply it. That would be a very suitable arrangement, but we have not anything of that kind as yet in the United States, except in so far as that certain stations having men specially fitted for original research work have attempted to carry out and develop such knowledge. We can take the different points which have been suggested by Professor Thorne and we can see that one valuable item of knowledge has been brought out by such and such a station, and another item of knowledge has been brought out by another station, and we can name three, four or five stations in the United States that have done more than other stations in thus advancing knowledge. So, I say, that if the farmers of Ohio are going to insist on our experimental station doing simply this work of applying the knowledge which has been brought out and discovered by others to the daily work of the farm, then you are narrowing the scope of usefulness entirely too much. I say, therefore, that our stations ought to have better facilities than they now possess for doing original research work, and they ought to be given more encouragement than they are given and do now receive in this department of work. I believe that fully one-half of the time and fully one-half of the funds applicable to this work ought to be expended in that direction. I believe if we do that, then agriculture will advance in the future, and I say unless that is done, I think the time of advancement will be limited and we will not be very long in reaching the limit.

Now, the question I have in mind was particularly with reference to the point that was brought out by Director Thorne in regard to the treatment of wheat and oats for the prevention of smut. The loss from this source is enormous, as he has mentioned, and so I think it is worth while to consider a point in respect to that portion of the address. The statement was made by Professor Thorne of the great increase we secure in the yield of oats by the proper treatment of this subject as relating to that particular cereal, but I find it equally true with regard to wheat and other cereals. The increase we would secure by simply avoiding the smut, over and above the amount we would otherwise get, would, I think, pay for the treatment required. That point was not touched upon, I think, by Professor Thorne. I would like to ask Professor Thorne whether he does not think this explanation covers the whole ground—and I am aware too that Professor Arthur offered a suggestion like this—that hot water develops enzyme—that is a ferment in the grain that causes it to germinate better. This idea was presented very fully at a recent meeting of the American Association for the advancement of Science, at Rochester, New York. I was there at the time, and at that very same meeting I presented the results that I had secured by treating wheat for smut with Liver of Sulphur. Now, fatal to his claim, I showed that the treatment of wheat with a cold water solution of Liver of Sulphur would bring us the same increase as a treatment with hot water. So that the treatment of the enzyme which requires a high temperature to properly develop it could not be the proper explanation. That is the only explanation that has been attempted, other than the mere physical explanation that hot water softens the covering of the seed. I would put the subject to Professor Thorne in the form of a question as to whether he does not think that is the proper explanation? We know that very many stalks of wheat and oats have the fungus threads in them. That is to say, they are attacked by the smut fungus and yet the smut fungus never comes to the head of the stalk; that is, the stalk never develops a head, and therefore, there is no opportunity for the smut to appear in the head. Hence, that is not counted in our percentage. For instance, we say we have ten per cent. of smut, but as an actual fact, we have more than ten per cent. of stalk smutted, because we are not counting the stalks of the grain that do not produce the head of smut. Nevertheless, we have stalks affected with the smut so that perhaps the proper percentage would be twelve or thirteen per cent., instead of ten per cent. My point is this: That when we treat seed with hot water, the Liver of Sulphur will answer just as well as the treatment which has been suggested. This treatment with the Liver of Sulphur, dates away back, at the same time that the treatment with the hot water began at the experiment station. I was botanist in the station at the time that Mr. Swingle, now of Washington, was my assistant, and we established this point at that time beyond peradventure. Other stations corroborated the result we arrived at in the experiments which they were making. When we treat with hot water, we prevent all of the smut, and, therefore, we are preventing the smut in these stalks, and do away with the thwarted, or aborted, or blighted stalks. Instead of looking around for an explanation of this treatment, we have it right here, as I think, that the extra increase simply means that these stalks, although smutted heretofore and heretofore uncounted, have not been calculated in arriving at the percentage. I would ask Professor Thorne whether he does not think that that percentage would fully bring it up to the point of extra increase mentioned by him.

Professor Thorne: That is precisely the theory that I had assumed as being the one most likely to fully explain this point. I did not know really that it had been demonstrated that these immature fungus smut threads had been found in the stalk. Perhaps I had overlooked that point, that not being of any special value, as you know.

In regard to this matter of original research, I most heartily endorse all that Professor Kellerman has said as to the necessity for such research. Without it, all progress must end. The main thought with us has been whether or not in the present conditions, not as a permanent policy, but in the present conditions of the relationship between a discovered fact and the application of that fact, it is not wiser for us to confine our labors more largely to the application of the fact, with the expectation that as work grows, and as we grow, we will eventually extend the work into more abstract lines in the direction of original research.

Mr. O. C. Tillinghast, of Erie county: I live up on the borders of Lake Erie, and I would like to ask a question for information. I would like to ask Professor Thorne, what counties in the state of Ohio are the most favorable for the growth of the sugar beet. The sugar beet industry is having a big boom in northern Ohio, and I would like to hear some one touch upon that subject.

Professor Thorne: The president informs me that that question will come in a regular address this afternoon, and it will be fully explained by Professor Selby, who has given that subject much study, and is better qualified to answer it than I am.

President Bradfute: With Mr. Tillinghast's permission, we will defer the answer to his question until that time.

Mr. S. L. Hill, Berlin Heights: Mr. Thorne spoke of the waste of barnyard manure on farms. I would ask him what season of the year he considers the best to apply this manure. The best results I have ever had, were in applying it in August, and I have come to this conclusion for several reasons. Not only can you draw as many again pounds in August usually as you can in the spring, when the mud is half-hub deep in many places, but you also have the advantage of hauling your manure at a time when your teams are not especially busy at other work. Then spread the manure as you draw it. This, I know, is contrary to the old idea. My father-in-law used to be always objecting to that. He claimed, that by spreading the manure as it was drawn, the hot sun coming upon it, all the strength of the manure was evaporated. That has not been my experience, however. It has been my experience, that if the manure is spread as it is drawn, it soaks into the ground and the roots of the corn in the spring take up the nutriment to much better advantage than if it is piled in heaps and subsequently spread. Then you do not have to wait three or four weeks for decomposition to go on. I would like to ask Professor Thorne whether he has had any experience of that kind, or has experimented any along that line, and if so, what the results were?

Professor Thorne: My experience is quite in line with Mr. Hill's. I have never seen a more marked effect from barnyard manure than when spread in the hot August sun on the timothy stubble. Our intention has been to spread the manure just as quickly as possible after it is dropped, no matter what season it may be in (applause). Of course there are practical questions that must be considered, but so far as the manure itself is concerned, I think you procure better results from spreading it as quickly as possible after it is dropped.

Dr. W. I. Chamberlain, of Hudson: Isn't it because there is less waste if the manure is spread at once, so that its various elements may be utilized at once and thus get into the soil?

Professor Thorne: I think that is the reason. There are two sources of waste. If the manure is spread out in the barnyard even though it does not heat, it is liable to leach. If it is allowed to remain in a heap then waste immediately begins and the combination of the nitrogen in the manure with the hydrogen in the water forms ammonia and this ammonia escapes as a gas into the atmosphere. I apprehend that the farmers of the state, annually, fail to secure at least one-fourth of the full value of their manure through this loss of ammonia.

A Member: There is one thing we have been troubled with very much and that is in ridding ourselves of what is commonly called "sheep sorrell." I find it almost impossible where it gets into the soil to keep it from getting into the wheat straw and into the hay, and by so doing it gets into the feed and into the manure, and is thus spread back again on our fields. I want to ask in what way that may be overcome.

Professor Thorne: I am not able to answer that question definitely. We have the sorrel on our farm. It is occupying entirely too prominent a position there, but I have never seen anything more encouraging in all our line of experiments than the single test of highly manuring a piece of sorrel land and sowing it in clover. The clover will choke out the sorrel so that none will be visible the next year. We are inclined to believe that with high manuring and following by a good set of clover, we can keep the sorrel under subjection. It is a very simple remedy and seems to work very well.

President Bradfute: It seems too bad just when a subject is so interesting that we are required to leave it and go on to the next question. Our time, however, compels us to hasten. The next regular address is on the care and management of sheep by Mr. S. H. Todd, of Wakeman, Ohio (applause).

Mr. S. H. Todd, Wakeman, Ohio, then came forward to the platform amid the hearty applause of the audience. He spoke as follows:

THE CARE AND MANAGEMENT OF SHEEP.

Mr. Chairman and Fellow Farmers: I am glad to hear the expression of your approval this morning. It does me good, and I am glad to have the privilege of talking to you again. I feel myself somewhat at a disadvantage this morning. You see I am not talking from manuscript and the audience is so different from those to which I have been accustomed. The audiences which I have been in the habit of addressing usually have been composed, at least one-half of ladies and you cannot imagine the difference, unless you have been in the same situation, that it makes to a man who undertakes to talk off-hand. The inspiration that comes from a mixed audience is wonderful. I remember engaging in institute work down in the state of Maryland. There the ladies do not attend the institutes, and I felt the work was so embarassing that I suggested to the superintendent of institutes that if he could procure a lady or two ladies so that I should have a mixed audience I could do very much better work. I felt that I had not done good work while I was in Maryland on that account. The Director, Mr. Amos, said to me as I was about to engage in my lecture at one of the institutes that he had procured a lady to come in and make one of the audience, that he had paid her a dollar and a-half to listen to me, and he did that for the purpose of having me at my best at least once before I left the state (laughter and applause). Now, as I went to the audience room I saw the lady sitting there. Of course, as I said before, it was inspiring, but directly I noticed that she got up and went out. I went to Mr. Amos and asked him what was the matter. He said that as soon as she had discovered who the speaker was and what he looked like she struck and wanted more wages (renewed laughter and cheering). Mr. Amos added that he would be obliged to give her another dollar to get her in and I said, "go and get her and I will pay the other dollar myself" (great laughter and applause.)

Now, we are going to discuss a subject this morning that has a great deal of interest connected with it, especially at this particular time—namely, that of sheep and how best to care for and manage them. With my experience, I have come to the belief that the formation of the animal has very much to do with its value as a food consumer and also in the profit we get in the sale of the product when finished. Hence, I will sketch to you first, briefly, what I would term a valuable sheep for the purpose of making mutton.

The formation of the sheep that would be favorable for the production of mutton would not be the desired formation for the purpose of producing wool, which I will show you further on. For the mutton sheep we should have an animal with a short, broad face, and wide on top of the poll. The width on top of the poll designates the brain of the animal. An animal without a good brain is an unprofitable animal to consume food, either grain or hay. Now, we want a sheep with a brain not only large, but active. How are we going to tell a sheep which possesses an active brain? We can tell it by the expression of the eye as well as by the revolutions of the jaw when it is consuming food. The active brained sheep will make three revolutions of the jaws while the inactive and sluggish brained sheep will only make two. While this may be desirable and is very desirable in a sheep for feeding purposes, it has its objections. This sheep is a nervous sheep and is always trying to get out of your way. That is a characteristic of the sheep possessing an active brain. Hence, it makes it sometimes disagreeable, (when you are undertaking to handle the sheep in the fold,) by running over the lambs. But I am here to say this, that the sheep is always fat and in good condition. The progeny of that sheep is always up and doing work at the udder, no matter what may be the surrounding conditions.

We should have a sheep broad on the back, the body of fairly good length, and we should have the loin broad and heavy, or broad and thick, and the top of the hip long; the ham well let down and the breech full so as to have what the Englishman would call "a good leg of mutton." Then we should have the flank short and thick and let down so that the under line of the sheep will be parallel with the upper line. Then we should have the fore flank full and the legs standing wide apart and short. The length of the leg will very much determine the time of the maturity of the animal. You will find that to be true—just as you lengthen out the leg of the sheep, just so much will you lengthen out the time of its coming to maturity. We should have the crop come well out, so that a line let down from the eye, as the sheep stands in its natural position, would strike the extremity of the crop. Then we should have the brisket of the sheep broad and level; not the breast bone hanging down like that (indicating). A sheep of the kind I have described, you will find to be one of the most profitable conformations of sheep to be had for the production of mutton. Not only that but it brings a larger price when it gets to the market. When we are selecting sheep we ought to pay more attention to the conformation of our animals in order to get the best machine to work out the grain and the hay that we are going to put through that machine during the winter.

Now, if you select a sheep for wool producing, it should be an animal almost entirely different from that just described. The neck should be longer; the head coarser; the neck connected with the body so as to have the appearance of a limb stuck into a tree, and I almost always select a neck which lets down a little where it unites itself on the top with the back bone. The shoulders should be narrow—the sheep wedge-form all the way through; the flank thin and cut up into the body of the sheep. Now, the same thing is true with the sheep intended to produce wool as with the cow intended to produce milk. Almost exactly the same conformation should be sought. One is producing wool that feeds upon protein food and needs protein in order to produce it. The other needs a mixture of food; needs more of the carbon, or carbohydrates—the mutton than the wool. The necessity for this you can readily see. If the cow is deprived of plenty of food to produce the amount of milk that she would otherwise produce, she feeds upon her own flesh in producing milk. The sheep that is producing wool when it is deprived of food necessary to the growing of the wool as fast as it would grow—feeds upon its own carcass. Hence that carcass must be supplied with food that has this property.

We have now two forms of sheep; one for wool and one for mutton. Now, the next point I wish to bring out in this discussion is with reference to the selection and breeding of sheep in order to secure the best results. I am here to-day to say that we need not confine ourselves to any of the thoroughbred mutton sheep in order to get the best mutton sheep for the market. We have been, I think, misled in this line and hence have done ourselves a great deal of injury. The result has been, on account of our fears of cross-breeding, that sheep have been driven largely out of this country and today when we want sheep they are not here to be had. I have found by actual experiment that the cross of the Shropshire with the Merino, or with a grade sheep of any kind, will produce as good mutton sheep and a carcass that will bring as good a price as a thoroughbred itself. I might bring illustrations to prove this. At the Shropshire show at Chicago held last fall, there were five wethers that were brought there from the College of Wisconsin. They were one year of age and weighed perhaps two hundred and twenty-five pounds each. They were cross-bred wethers and taking the five together I think they had not their equal in the show ring. The cross was between the Shropshire and the Merino. We can make other satisfactory crosses, but this seems to be one of the best crosses we can make.

It has been urged that we may make one cross, but after that we have to stop because they will be running down; the animal will be retrograding. From experiment I think I have found the contrary to be true, that they continue to grow better every cross, provided I use a thoroughbred sire—and I am very careful to use every time a thoroughbred sire—one that exhibits the male qualities to the fullest extent and will be, when used, prepotent and stamp himself on his progeny.

I want to give one or two illustrations to prove this point. The cross-bred sheep that have been in competition at the fairs, bred in this way, have taken their share of the prizes, and many times have come back victorious over everything on the ground. For example, a lamb that was shown at the Madison Square Garden Show a year ago last fall was bred from an old Merino ewe that was not worth over one dollar and fifty cents with a thoroughbred Shropshire sire. When I came to compete for the championship prize there were brought against that lamb four of the best Southdowns that Canada could afford, fed under the intelligence and with the experience of the Canadians; four of the best Shropshires that they could present as the result of their experience and intelligence in handling and feeding sheep; two of the best Hampshires and three of the best Long Wools and one of the best Dorsets; all were brought in competition with the lamb to which I have referred. Ofttimes we say that we, as Americans, are living on the borrowed intelligence of England in promoting or in carrying on our work in the line of producing good animals. Now, that lamb that was thus crossed took the championship prize at that time, showing conclusively that, although the experience of a long period of years was brought out there in competition, and with that cross-bred animal in competition with them, they had all to seek cover and yield the prize to the cross-bred lamb. I might bring you more facts on this line, showing most conclusively that we can, in raising the wool bearing sheep, or in rearing the mutton producing animal, secure the very best results. Oftentimes we can get good results, as I said at the outset, by using the poorer breeds.

Now, we might want to understand a little more fully how to carry on this crossing. I, myself, have used the Shropshire cross first and then on the progeny of the Shropshire cross, on the ewes that I saved, I used the Southdown; then the Shropshire sire on the progeny of the Southdown. In this way I have built up one of the finest flocks of sheep for the purpose of making mutton that this country or England, I believe, ever produced.

Now, we are forced today, if we bring sheep to our farms at all, to take anything and everything that bears the name of sheep, and thus it is that in order to supply this demand we are receiving sheep from Virginia, sheep from the mountainous regions of Maryland, sheep from Missouri and sheep from anywhere and everywhere; common sheep, the old native sheep, as we call them, and we ought to understand, and understand very well, how to use these sheep, or else we are going to procure them at a loss and through that loss we may lose confidence and faith in the sheep business. These sheep are not calculated to make sheep husbandry a profitable business on any of our farms. They have not been trained on that line, but by using ewes as I have said in a cross with the Shropshire sire--and I say Shropshire because I believe today that the Shropshire sheep makes the best cross of any other mutton sheep we have—we may obtain good results. Nevertheless, there are good mutton sheep in this country outside of the Shropshire.

We have to breed sheep so that when they come to the market they will be attractive. You perhaps thought when I was speaking of the flank of the sheep that it had very little to do with the price of the sheep on the market. I want to say to you that a lamb that I put on the market of New York last year, and which was built exactly as I have described to you this morning, and which would have filled the mold perfectly, had he been pushed into it flank and all, weighing thirty-two pounds when dressed for the market, brought more than other lambs in the same consignment weighing much more. When I shipped them they were all tagged so that I could trace the difference, if there was any, in the price which they brought and could place it where it belonged. This lamb was tagged lamb No. 1. Then there were No. 2, No. 3, No. 4, No. 5, No. 6, No. 7 and on up to No. 11. I sent them all to the same commission man and asked him to be careful and sell them as well as he could and report the sale of the lambs together with the numbers on the tags. This good lamb which I spoke of that had a flank formed in the way I have described, and which had been fed right and which weighed thirty-two pounds when he was dressed for the market, brought the best price. The other lambs varied so that at the other end of the list lamb No. 11 weighed forty pounds. The ordinary farmer would have said that that lamb was the best, because it weighed more, going for quantity and paying no regard to quality. Now, when the price was returned the lamb marked No. 1 brought me seven dollars, while the lamb marked No. 11 brought me four dollars. You can see the difference. It was very marked in that single experiment relative to the shipping of lambs to market and finding out what should be the final result. What is the reason of this, my friends? Simply that when that lamb was hanging on the pegs he was hanging there as an advertisement, and this flank I have told you about connected the hind quarter with the carcass of the sheep, so there was little if any separation, and thus he advertised himself as best he could. But this other lamb over here had a thin flank, a flank that was cut up into the side, and when he was hanging there by the side of this lamb on the peg, the hindquarters left the front part of the carcass and he had the appearance of a jack rabbit, and nobody wanted to buy him. He had to be sold at a sacrifice of three dollars. You will understand from this, my friends, the importance of our knowing what the conformation of sheep should be in order to bring the best prices. The markets are being flooded with these inferior animals that we cannot keep at a profit on the farm. No matter what may be the price of sheep, or the price of wool, unless we know how to manage them in order to turn them into a machine for the manufacture of what we want, sheep will not become profitable either for the working up of grain or for advertising themselves well when they go to the market. We can do this as I told you, by using the Shropshire.

Next I come to the feeding of sheep. I speak of this because there is a great deal of importance connected with it—the training of the ewes which we are breeding from. We neglect them, especially through the summer season, letting them run down in vitality, thus making them poor producers, because they have not vital power enough left. We do this through neglect. Oftentimes in the dry season of the year they are short of feed, and, above all, short of water, because we think they can live—and so they can—without water. But they cannot live and be expected to be worked on the farm so as to be profitable, unless we supply all of these natural wants that they have. Oftentimes I have seen sheep neglected on the farm at a time when they would drink—if they could get it—a gallon of water a day; I have seen them neglected for three or four weeks and left without a drop of water, save the moisture that they might gather from the grass. Oftentimes during that period there would be three or four days that there would be not even a dew sprinkled over the grass to satisfy the longing of the sheep for water. Thus they become somewhat diseased and run down. Then if we are going to take them in that condition, expecting them to do work for the next year, we will be disappointed in our efforts to raise little mutton machines to put upon the farm. We cannot expect to get good results unless we give careful attention to the directions indicated.

Now, I have practiced this: Whenever my sheep are brought to that condition —a low state of vitality—I am in the habit of giving them a little grain, bran and oats, in order to keep up their vitality and thus enable them to resist the many diseases that are lurking about to prey upon them. I have often had great success in this line.

Then when it comes to feeding sheep for winter purposes, especially lambs, although corn is cheap, and we may say that the expense would be much less in feeding corn than other grain, yet corn may prove to be the most expensive food we can give the sheep. We have had various experiments—hard fought battles—on this matter of food. We have had tests on the fair grounds and in other places, which have brought out the difference obtained by careful feeding. I remember a few years ago, when I was undertaking to show sheep at a fat stock show in Chicago, I was feeding them as best I knew how, but I came home every year with a sore head. You know what that meant. There were seven in our family and there were seven sore heads, which made a pretty sore headed crowd. I continued my efforts, undertaking, if possible, to try and find out how to feed, so as to get my foot on the first round of the ladder. That is what I wanted to do. I knew if I could get one foot upon the first round of the ladder I could climb it. Now, how was I going to find this out? The English were there making an exhibition of their sheep. The Canadians were there exhibiting their sheep, but they did not want me to know the secret of their success; they had competition enough. I found it out by observation. That means, my farmer friends, when we are going through this world, if we expect to succeed, we have to keep our eyes open. I discovered that the animals that were bringing prizes at those shows were fed a half ration of bran. That is the first time I ever knew that bran was worth anything as a food for sheep. I had been taught from my boyhood that its only use was as filling for another purpose. I went back to the farm and commenced using the bran, making rations part bran, and the result was that at the next show I met exactly the same kind of sheep I had been meeting, but I got one first prize. Then I had my foot on the first round of the ladder; I had been struggling all these years at the bottom of it; I had never been able to elevate myself, from my past experience, sufficiently to compete with the English and Canadian breeders; now, I had made a step forward. I went on the next year and got my share of the prizes. The next year, the Shropshire Record Company offered great inducements to bring out Shropshires, so as to advertise them, and thus the temptation was great for every breeder of Shropshires to be present. I was there with my sheep competing, I want to say to you, my friends, not against the intelligence of America, but competing against the intelligence of England. England had twelve representatives in that show, and prizes to the amount of five hundred and forty dollars were offered. After the show was through, with the experience I got in feeding sheep so as to secure the best results, four hundred and thirty dollars of it went to the old Buckeye State (applause).

Now, my friends, this was not that I had changed sheep, but I at last knew how to feed them. I took exactly the same sheep, but the process of feeding is what made the difference. Hence, we must not content ourselves in putting before our sheep anything that is cheap and expect to get the best results by so doing. I can bring up many other illustrations, but this is sufficient.

Caring for our sheep in the summer season so as to avoid disease is another point I wish to bring out. You know that the disease called the lung worm, or stomach worm, has caused great destruction to our lambs the past few years. What is the reason of that? The parasite that does that work has become numerous and I think we have learned with others this is largely due to keeping our lambs on old pasture, pasture that has been used for sheep for a number of years. The old sheep germinate this parasite and deposit it and it remains in the pasture—we do not know how, but it remains there—and then when the lambs feed on this old pasture they are infected with this parasite which multiplies rapidly and soon destroys the life of the lamb. Hence, we have "paper skin" as it is often called.

I have found by experimenting two years that by keeping my lambs on new seeding where there had been no sheep the year before, or furnishing them pasture by raising it, plowing the ground and sowing oats or peas or sowing rye in the fall, that I have obviated this difficulty entirely. Last year I did not lose a lamb. The year before I did not lose a lamb except those which I subjected to old pasture. I have observed from experiments by a number of other breeders living near my farm that practically the same results have followed.

If we have these pastures that have been infected possibly it might be best for us to have our lambs come as early as the last of February, or the first of March, and turn them out only as we can turn them out on new pasture or new seeding or on pasture that we have specially prepared. This I think is one of the ways in which we can lessen the expense very much of raising sheep and that is to raise our pastures the same as we raise our corn. In that way we will be able to keep three sheep where we are now keeping one and keep them in much better health and they of course will be much more useful on our farms. I have only commenced this experiment of raising pasture, but I believe it to be one of the most paying things that I have ever undertaken on my farms. Now, the lambs coming as they do early, after they get to be four months of age, or three months and a-half of age, then, if there is only old pasture for them, I would say wean them and shut them up for a little time, feeding them grain and good clover hay, and thus avoid that disease which cost the state of Ohio year before last a million of dollars or more. I have found that by treating my lambs in this way I have, thus far, insured them against that troublesome disease.

As to the keeping of sheep through the winter. I do not like to keep my ewes, that are going to raise lambs, chiefly on corn. I feed one part corn, two parts oats and two parts bran, with all the clover hay they can eat. If you have not clover hay to feed your sheep this coming winter and are going to compel them to eat timothy hay, you would better have shot them when the winter commenced rather than see them die after you have brought them through to the spring (applause). You must be careful on this line. Of course, corn fodder is good for sheep, next to clover hay.

The arranging of the sheep troughs will have very much to do, often, with the success of keeping the sheep on the farm. I will venture to say today that there will be several thousand dollars lost to the State of Ohio from feeding sheep out of that old V-shaped trough—that I presume Jacob fed his sheep out of—in preference to changing to a better trough. What are the conditions of that trough? It is built exactly in the form of a sheep's mouth. They can eat the grain in one-fourth the time that they could eat it out of a trough that would be practical for feeding sheep in. The result is they cannot digest and properly assimilate the food which is thus carried into their stomachs. Besides, usually, these troughs are left down nearly on the surface of the yard, or the surface of the ground. The lambs when they are fed commence at one end and follow the feeder as he puts the food into the trough, winding back and forth from this side to that side and by the time the feeder gets to the other end of the trough he looks around and what does he see? He sees one-half of the lambs standing there looking him squarely in the face. Why? Simply because the refuse that is dropped from their feet in passing over the trough has been deposited in the feed and as a result the sensitive and timid sheep will not touch it, while the stronger lambs will finish it up. Thus, with that kind of feeding, he is killing his sheep at both ends. He is starving them to death at this end and over feeding them at that end, both of which evils we should avoid. If you are going to use the V-shaped trough, put a board over the trough so that they cannot jump into it. I would recommend, however, the use of a trough which I am going to describe. Some of you possibly may have invented a better trough, and if so I hope you will inform us of it when I am through. This trough is made from three boards, eight inches wide and one inch thick. I put the boards together so as to form two troughs with the three boards by running the side boards as far below the center board as we do above the center board, placing an end in the trough which is eight inches wide and two feet long, and providing it with legs at the end of these end pieces so as to keep the trough from turning over. The length of the legs should be twenty inches and they should be placed on the trough so that, when ready to use, the top of the trough will be fourteen inches from the ground; in this way I have two troughs. Now you may ask me the advantage of that? It costs but a trifle more than it does to make the V-shaped trough; it has a larger base and the sheep rarely, if ever, jump over it; then it takes them, as I said, four times as long to consume the food out of a trough constructed in this way as it would out of a V-shaped trough. Then again the farmer goes out to feed his sheep and he sees a little filth here and a little filth there in the trough; rather than go and get a broom and sweep it out, he will risk putting the food upon that filth, unless there is an easier way to obviate the difficulty; but if he knows he can turn the trough over, then he will do so thus providing the sheep with a clean trough in which to deposit their food. Again if it should rain and partially fill the trough with water which, with the dirt that would naturally get into it, might render the food distasteful so that the tender lamb just commencing to feed would refuse it, he can turn the trough over and have a dry trough ready for use without further trouble or delay. As I said, he will do that when he would not remedy the trouble if he had to go and get a broom and sweep it out. You will find that very much benefit will arise even from this.

Another point to observe is to provide pure water. No kind of stock need water any more than sheep and they will drink from a gallon to a gallon and a-half a day if they can have it. We cannot have good success with our sheep if we deprive them of that necessity—of that *actual* necessity. Now we want a water trough so that it will be up from the ground such a distance that the sheep can go and stand and drink without effort. Why does this have so much to do with success in sheep raising? The water we prepare, the feed we furnish, the trough we use and the rack are all elements in the success we are going to have at the end of our work in profitable sheep raising.

I want to say, my friends, further—and it is about time that I should close this address—I do consider that the sheep should have more attention at this time. I do not believe that the farming community can do nearly as good work without the sheep as with it. Let me notice some of the benefits connected with the keeping of sheep on the farm. They are so destructive of weeds. I remember some years ago, when it was announced that the wild lettuce was going to drive out all the grasses of the state, I became alarmed about it. I saw at once that it would drop its seed right down into the best blue grass sod, there grow profusely and crowd the grass right out; but I soon found, my friends, that sheep love the wild lettuce and would nearly break their necks to get at it. Thus they could be turned into a meadow when the grass was up a foot high and they would go all over the meadow grubbing out the wild lettuce and leaving the grass. What set of men could you hire that would do that work as well or one-half as faithfully and then use the product they thus gathered for the making of delicious mutton and warm wool? Still, these things we never regard; we go on raising sheep not thinking there is anything in them save the money that is connected with the business. The white weeds that grow in our meadows can be treated in this way and you will be rid of them, thus securing to yourself good clean timothy hay that will bring two and three dollars more per ton than it would if you had not had the sheep gathering the white weeds; besides that, you have an increased amount of timothy hay over and above what you would otherwise secure if you had not had the sheep gather up the white weeds. Then the brush. Many of us are negligent, careless and shiftless and if we would keep a few sheep there would not be so much difference in the appearance of the farms throughout the state of Ohio. Again, I am here my friends to say that they have a great moral influence over those who are much with them.

Now all of these things we want to watch and watch carefully. You know my friends that the glad tidings that were brought to this world and that were communicated to the wise men of the east, were also communicated to the shepherds, who were watching over their flocks by night and by day on the beautiful hills of Galilee, and as they were there listening, they heard that angelic song, the chorus of which was "Peace on earth, good will to men." Let us stay by the sheep, and if we have not got any, then let us get a few and we may hear the same angelic chorus. I thank you. (Hearty applause.)

President Bradfute: We have all been interested and instructed by this talk of Mr. Todd's. We could, perhaps, use to advantage a few minutes in discussion of this question. It is nearly our time for adjournment, so that if you have any questions to ask please be as prompt and as brief as you can.

Dr. W. I. Chamberlain, of Hudson: Mr. Chairman, before the discussion begins allow me to make one request, and that is that all of the regular State Institute workers, immediately after the adjournment, come forward to the stage and meet me as I want to see them in regard to a matter of some importance.

A Member: Mr. Todd spoke of making a cross of the Shropshire and the Merino, but he did not state which cross he would make, whether he would use the Shropshire ram and the Merino ewe, or the Merino ram and Shropshire ewe.

Mr. Todd: I thought I said we used the Shropshire sire every time, and I went on to describe that he should be one that possessed distinctive male characteristics so that he would stamp his prepotency upon his progeny. You can work this easily because the sire has more influence towards making the formation of the sheep. The trouble with the Merino sheep is that it is strictly a lean fleshed sheep, and in order to secure the kind of animal we desire we use the Shropshire sire. With a Shropshire ewe we would be getting a lean sheep with the formation of the wool producing rather than for the mutton producing.

Mr. S. L. Hill, of Berlin Heights: I agree with Mr. Todd in regard to the cross of the Shropshire and the Merino. I have had some experience in that regard. But the death of the lambs seems to be a serious question just now. I would like to know if there is not some remedy by which we can check it more than by the mere change of pasture. I had a fine flock of lambs but I placed them upon an old pasture which had been used for several years for cattle and sheep and finally the loss of the lambs grew to such an extent that we averaged two a day. A neighbor of mine who was similarly situated used turpentine in the proportion of sixteen to one, but as that was not my faith I thought I would test the pure standard. I gave a teaspoonful of turpentine to each lamb. Some of them rolled over and kicked around for a while but finally were up and about. I then changed the lambs to a new pasture which I had just mowed and the grass had come up new and fresh and after I had changed pastures I only lost one or two. Now the question with me is whether the remedy was due to the change in the pasture or whether the dose of turpentine checked the disease. I am sure the whole flock would have died in a month if they had remained on the old pasture.

Mr. Todd: It was both, I think. I think the use of turpentine under such circumstances is quite beneficial but at the same time the point I made was to avoid the disease altogether by exercising proper judgment in the pasturing of the young stock. If you are keeping the lambs on old pasture and they become afflicted with that disease they necessarily lose their vitality and do not seem to be able to pick up again. I would rather avoid the disease than attempt to cure it. But if your lambs do contract the disease then that would be one of the treatments that I would recommend.

There is another point I wish to bring up here that I think might be of benefit since it has been hinted at by Mr. Hill. That is, there is danger of overfeeding lambs that are afflicted with this disease after they have been run down in vitality. If you take a lamb which has been run down in vitality by reason of the ravages of this disease and then go to feeding it, you have to exercise great care to avoid overfeeding. If you overfeed the lamb after he has run down in this way, the result will be, to a great extent, that you will simply hasten his death with the feed that you will give him. I have known several instances of that kind on a farm adjoining me where they put them into a field and commenced feeding them grain rations. A few of their lambs died at once and after that they got along without any trouble; those lambs that were able to withstand the change got along very well. Being run down in vitality when they came to take into their stomachs this richer food they could not digest it in their condition of health, and consequently their death was simply hastened. That is another thing which we have to watch with the greatest care. If those lambs had been kept on short rations so that they could assimilate the food which they ate they would have run along and as the weather cooled off they would have recovered from the disease. But as I said before, such lambs are not nearly as good to feed as they would have been if they had not had that trouble.

Mr. Hill: Is there not danger of that same disease attacking old sheep if kept on these old pastures.

Mr. Todd: No, sir, I think not. So far as my experience has gone we have never lost an old sheep. They seem to be able to withstand the influences brought to bear from the use of old pastures and the deleterious effects do not seem to manifest themselves to the sheep which are fully matured. They do not seem to succumb to it. They sometimes will run down.

I wanted to say just one word further relative to a caution to be used by those who are engaged in breeding sheep to breed from healthy sheep. That is a great point, I think. Now owing to the scarcity of sheep we are using everything for breeding purposes simply because we want sheep. It will not pay us to do that, I believe. We may introduce disease into our flocks even if we do not have it by the indiscriminate use of unhealthy sheep for breeding purposes. We should always aim to get sound animals to breed from. I am going to bring up an illustration to prove this. I procured a ram from England, paying one hundred dollars for him. He was a very fine ram but when he was brought to my place I noticed he had a little cough which I did not like. It did not seem to injure him so far as I could see. I bred him so as to get twenty lambs in the fall after he came to my place. He was a large ram weighing one hundred and twenty pounds, perhaps. The next year he did fairly well when he was turned out in the field but still continued to cough. I could not stop it although I used remedies with which I was familiar. I used him the next fall to thirty ewes and after I had used him to the thirty ewes I was going to use him later but he gradually ran down and in a short time he died. This was also true of every single one of the lambs, save five or six which I shipped but which were never heard from. Out of the fifty lambs, when they reached the same age that he was when he died, there were but seven living. To show you that it was due to this tendency, I will say that I had another imported sheep from England that did not have any of this trouble and I bred him so that he raised fifty-five lambs and his lambs were running right with these other lambs, exposed to exactly the same influences and I never lost but one of them, showing that this tendency to disease was imparted to the first set of lambs through the sire. It did not come from the blood of the sire but the sire had a weakness and he imparted that weakness to the offspring. The pedigree was there the same as in the other ram, but the weakness was imparted to his progeny. The other lambs had power to resist and were healthy and sound. The lambs that had this tenderness and tendency toward weakness were susceptible to the ravages of disease. The parasite was there in both cases. One could resist it and the other could not. For that reason I want to say that we want to be careful in regard to the selection of our breeding stock.

Mr. S. C. Herdman: I would like to ask Mr. Todd what quantity of grain ration he has found most satisfactory for ewes suckling?

Mr. Todd: With ewes, where I am raising to get my lambs to do the best in the quickest time, I would not feed as strong a ration of grain as I would when wanting to put them off as winter lambs. They take about two pounds and a-half a day of grain and that grain ration consists of two parts bran, two parts oats and one part corn, with all the clover hay they can eat, and I have secured the best results from that ration of any I have ever given. I will say to you that I have frequently been able to make my lambs weigh, at eight weeks of age, fifty-six pounds with that kind of treatment. You may doubt that statement a little. I got myself into trouble this year shipping a pig to a man. He wanted a large, heavy pig about six months of age and I told him that I had one that would just fill the bill. I shipped him the pig which weighed two hundred and sixty-five pounds. He said, "you have gotten yourself into trouble shipping that pig down here. The pig is all right and we like him but everybody who has come to see him says that you are the biggest liar in the state."

Mr. Orr, of the National Farm and Stockman, Pittsburg, Pa.: I would like to ask Mr. Todd a question about that jack rabbit lamb that he spoke of. I can testify to the truth of most of Mr. Todd's statements and especially that sore headed business out at Chicago. The question I wish to ask is this. You spoke of that jack rabbit lamb No. 11, weighing forty pounds and selling for four dollars. Was that a pretty good lamb?

Mr. Todd: Yes that was a very good lamb. I could very nearly give you a description of him. Of course with that thinness he was a little longer in the leg, by which, as I stated before, you can tell just about the time of maturity. We have observed that fact so that I believe we can rely upon it with certainty as being a sure guide. This lamb was longer in the leg and of course there were many other things besides the flank, which were different from the other lamb. I do not want to leave the impression that that had all to do with it. But I think one of the means by which we can ascertain to a great extent the characteristic of the sheep is by the flank. I do that when I am judging sheep. I often get myself into trouble about it because they say that I make too much fuss about the flank.

Mr. Orr: Men are sometimes accused of giving extreme illustrations and not taking a fair average.

Mr. Todd: I give extremes here.

Mr. Orr: If you were going to market to purchase a lamb and you saw one lamb weighing thirty-two pounds and another lamb weighing forty pounds would you have paid twenty-two cents a pound for the former rather than to pay ten cents a pound for the latter? Was there that much difference or was the difference in the commission merchant?

Mr. Todd: No I do not think it was in the commission merchant. But I will tell you, Mr. Orr, I would do that if I was buying a lamb as they buy them down in New York—to destroy money; but if I was buying to destroy lamb, then I would buy the other (laughter and cheers).

Mr. S. L. Hill, of Berlin Heights: I would like to ask Mr. Todd one question. At what age do you begin to feed grain rations?

Mr. Todd: About three to four days of age providing I have a room where they can go in by themselves. The first ones that learn to eat, will not learn in that time. It possibly may take them seven days, but if you have a room which is accessible to them and to them alone so that they can go into that room and they see the other lambs eating, they will soon go to work themselves. They learn very young. I think I may safely say at three days of age they will commence working at it.

President Bradfute: We perhaps will have to bring this discussion to a close. I want, however to give a little experience of my own in connection with the question asked by Mr. Hill in regard to this disease. In 1896 we began with ninety lambs and when we got through we found ourselves in the same condition as most others in our county, with only thirty. They died in spite of all we could do. We found a remedy toward the close of the season and by the use of this remedy we saved the thirty lambs. It was a remedy suggested by the Indiana Experiment Station. It consisted of one pound of ground worm seed added to eight pints of salt. Since that time we have had little difficulty with our lambs although we watch them very carefully. Whether there was some other cause that saved them or not, I do not know, but this year, at any rate, we have only lost two or three lambs. This seed should be fresh and freshly crushed. It can be obtained very easily at any of your drug stores.

Mr. Herdman: In what quantities do you feed it?

President Bradfute: In our case we always keep salt before our stock so that they simply take what they need of the salt.

A Member: Is it salt or salts that you use?

President Bradfute: Common, barrel salt. It has been used successfully also by others.

Mr. Todd: We have had the same result by feeding calomel and quinine but I believe the lambs would get well if we didn't feed them that. There comes a time when about so many lambs will die anyhow and the others will get well. About the time the others are getting well you are apt to give them some medicine and after their recovery you attribute the cure to the medicine.

President Bradfute: That is true, but in our case the lambs had started to die. However, we must conclude this discussion.

Before adjournment I want to announce the committee on nominations and the committee on resolutions which are as follows:

Committee on Nominations—Mr. S. H. Todd, Wakeman, Ohio; Mr. J. P. Hine, Shinrock, Ohio; Mr. E. C. Ellis, Crestvue, Ohio.

Committee on Resolutions—Mr. H. P. Miller, Sunbury, Ohio; Mr. L. P. Bailey, Tacoma, Ohio; Mr. George E. Scott, Mt. Pleasant, Ohio.

On motion, duly seconded, the Institute then took a recess until two o'clock P. M.

AFTERNOON SESSION.

TUESDAY, January 11, 1898.

In calling the Institute together, after the noon recess, President Bradfute said:

Gentlemen, the time has come, and indeed past when we should get to work.

I have the pleasure this afternoon of presenting to you M. C. Thomas, of Mingo, Ohio, who will address you on the subject of

PRACTICAL CORN GROWING.

By M. C. THOMAS, Mingo, Ohio.

At first thought it may seem to some of you like a waste of time to discuss such a subject as "corn growing." Nevertheless it is a fact that none of you will dispute that there is no grain crop that the average farmer can raise that will produce as much good, nutritious food from a given amount of seed as will maize or Indian corn; also that we can greatly increase the crop from what it is at present, by giving it more thought and better attention. Now what I mean by this is not more acres, (for we already plow too much,) I believe the possibilities of a single acre may have been reached, but the possibilities of ten acres never have; what we want is less acres and more bushels to the acre, and by so doing we will be enabled to leave more of our land in grass. In order to do this there are a number of important points to note, and, time being limited, I will touch only the ones that are most essential in the growing of a good corn crop.

Corn is a crop that to do its best requires a good, rich soil, and either naturally or artificially underdrained, as it will not thrive where there is too much water. The ideal place for a corn crop is a clover sod, and if it is not all naturally rich, treat the thin places to a coat of stable or barnyard manure; by so doing we have the foundation laid for an even growth all over the field. This is a very important point in growing corn, if we make a failure in some part of our work at the beginning, we cannot overcome it in the after part of the season. Next to a clover sod, I prefer a timothy sod, next wheat stubble and last of all corn stubble. It is an old saying that "ground well plowed is half harrowed," and I believe it to be true; and it has much more than this to do with the growing of a good crop; our ground may be ever so rich, but if the plowing is poorly done the chances for a good crop are greatly reduced. To do good plowing we must have a good plow (I prefer the Oliver) and have it supplied with a wheel and jointer. By using the wheel the plow will run much steadier, and the depth of plowing can at all times be regulated; and by using the jointer, all the rubbish and sod will be placed in the bottom of the furrow, where it will not bother in cultivating the corn, and it will more readily decay and benefit the growing crop. By not making too wide furrows and turning them at an angle of thirty or forty degrees, we will have an ideal place to make a seed bed for the reception of the seed. As to the depth of plowing, we must be governed by circumstances; on clay land we find that four or five inches is plenty deep, while on black, bottom land from six to eight inches give the best results. But there can be no iron-clad rule laid down as to this, what will do well in one locality will utterly fail in another. As to the time to plow, I prefer the spring, just as soon as the ground is dry enough to crumble nicely from the moldboard. I have seen farmers so careless about their plowing that if the plow strikes a stone they never stop to back up, but just follow a "cut and cover" system, and if they plow a "haw" land the furrows will be so crooked that it takes them almost as long to finish up next to the fence as it does to plow the field. Such plowing might have done in the remote ages, but not at the present time of low prices and close competition. Every spring, field after field of corn is planted before the ground is put in proper order. Corn will not thrive when it is dropped between a couple of clods, and the easiest time to cultivate corn is before it is planted. We must have the ground worked down into a fine, mellow seed bed before planting if we have any assurance of a good crop. The spring-tooth harrow is a splendid implement to cut the ground up with, and if it happens to be cloddy, I prefer a plank drag to a roller, as it does not pack the ground as much and will mash the clods just as efficiently. And just before planting use a fine-tooth, smoothing harrow; this will leave the surface fine and level.

Every year many a field that would have produced a large crop is ruined by planting bad seed. I consider good seed a very important factor in corn growing. There are a great many ways of procuring good seed, but I prefer to husk the best corn first in the fall and pick my seed for next year's planting and put it away in some dry place where the rats and mice cannot get at it. Seed treated in this manner will give no trouble. As to the kind of corn to plant, we must be governed by the kind of ground we have. Never plant a large kind of corn on thin land and *vice versa*. Every four or five years it is a good plan to change seed, but always get it from the north, as this will tend to increase the earliness of our crop. In shelling the seed, I remove the butts and tips of ears; by so doing the grains are all of uniform size, and work much better in planting than if some are large and some small. Some one will say, "Your corn will not fill out at the points of the ears." I overcome that difficulty by replanting the missing hills after the corn comes up, thereby prolonging pollenization.

The time of planting will often make a difference of several bushels per acre in a corn crop. We have a certain class of farmers who are always on the alert to beat their neighbors, regardless of results, and in nine cases out of ten they plant too early, before the ground is properly warmed. It is slow about coming up, and when it does come it presents a yellow, sickly appearance and is stunted for all summer. There is also danger of early frosts in the fall, if the planting is put off too late. In our latitude we find that if every other condition is favorable, we get the best results by planting from the first to the tenth of May. Great care should be taken to get the planting all done at as near a uniform depth as possible. By planting it all at the same depth, it will come up evenly and will admit of cultivating sooner and better than where some is planted deep and some shallow. Every one has his own opinion about the depth of planting, but from experiments conducted in the same field the best results were obtained where the corn was just merely covered. We use the wire check rower and plant in hills three feet, six inches each way. I like this way of planting best for several reasons. It is easier to cultivate, the ground can be kept leveler, it is much easier to harvest, and I get just as large yields when it is planted in hills as in drills.

As soon as the corn is planted, begin cultivating by using a light, fine-tooth harrow, and again in three or four days use the same implement and go in the opposite direction from the previous harrowing. These workings will destroy all weeds that germinate and will keep the ground fine and mellow, thereby giving the young, tender corn plants every opportunity to come through the ground quickly. As soon as we can see the corn along the row, we replant the missing hills and start the two-horse cultivator. We use the cultivators with three small shovels on a side; the first plowing we plow very close to the corn, and after this plowing, if the ground is inclined to be dry, we use the roller and follow this again with the cultivator. After this we cultivate each week, each time in the opposite direction, shallower and farther from the corn. We continue this cultivating until harvest begins. After this we do nothing more to it except go through with a hoe in July and August and remove the stray weeds.

In cultivating a corn crop, it is very essential that we give every hill attention and do our work thoroughly. Do not be like the boy one of my neighbors had working for him; one day he sent him to the field to hoe the corn; he had been gone about an hour, when he returned; the farmer asked him what the trouble was and he replied, "Well, sir, the big stalks will make corn without hoeing and the little ones won't amount to anything anyway."

Where wheat follows corn, it is often very tempting to us to begin cutting the corn when it is yet too green. It never pays to ruin a crop that we already have for the sake of putting another in its place. Corn to be in the proper shape for cutting, at least half the husks should be turned brown. When corn is in this condition we cut into shocks twelve hills square, containing one hundred and forty-four hills. Some prefer half or third shocking, and then letting it stand for a few days in this manner, before making the shocks full. I have tried both methods in the same corn at the same time and I found that the full shocks kept better than when half shocked. When it is half shocked, the shock begins to get hot and cure out when the fresh corn is again placed around this, and if the weather happens to be warm and damp, it will cause this middle to spoil; whereas, if it is put into full shocks at first, it will all cure gradually clear through, without any being spoiled. Shocks will also stand up much better when the whole shock is cut at once. In tying the shock around the top, take a small rope and pulley, draw the shocks up tightly, (not too near the top) and then tie with binder twine; after the shocks have stood five or six days the band will become loose, they should then be gone over again, drawn up with the rope and the band tightened, and there will be no trouble about having down shocks, provided they were decently set up at first. After it has stood ten days or two weeks, it will be ready to commence cribbing. The husker and shredder has been used some in our vicinity, but has been discarded by almost every one on account of the extra expense. This is a splendid way to care for a corn crop, but will never become popular until some plan is adopted so that the work can be done more cheaply. Aside from the shredder, the best way is to husk and bundle the fodder, and if fortunate enough to have barn room, store it away early in the fall, before it is bleached by the rains; if it is to remain in the field, place three shocks in one and be very careful that it is set up close and firm together, and tie around the top tightly. Fodder fixed in this manner will keep very well except the outside bundles. In husking corn it is very essential that the work be done early in the fall. The weather is then much more pleasant for the work, the fodder is in better shape and if winter overtakes you with any in the field to remain until the next spring, the loss will be enough to have hired it husked the fall before.

In conclusion I will say that if you are a corn raiser, stick to it; do not quit because the price is low; strive to improve your crops and I think you will see brighter days in the near future.

President Bradfute: This is a question in which you are all interested and which has been very ably opened by the speaker. I trust that there will be a general discussion of the subject now before you. Any one who has anything to say on the subject of corn culture, we will now hear from.

Mr. W. T. Betz, Franklin county: I would like to ask the gentleman why he prefers to plow in the spring for corn, when he plows sod, rather than in the fall.

Mr. Thomas: I never have any ground to break except clover sod and I have found if that is plowed in the fall it will pack and become too solid, while if plowed in the spring, not plowing it too wet, I can get a larger yield than when plowed in the fall.

Mr. Betz: Nevertheless that depends largely upon the condition of the soil. I make fall plowing a sort of a hobby for two reasons. I do not think it has a tendency toward making the soil too compact and too solid unless your soil is too dreadfully poor already to raise corn upon; and furthermore it obviates the necessity of working the ground when it is too wet and gives you an opportunity of getting an earlier start in the spring. I have had better success from fall plowing than from spring plowing. I live in the Scioto Valley where the land does not pack very readily and, as I say, I have received the very best results by fall plowing and thus destroying and getting rid of all the parasites which otherwise might prove detrimental. Working the soil in this way we have never found it necessary to use a plank drag or a roller to crush clods. I think it is better to plow your land so that you will not have any clods to crush.

Mr. Aimes, of Washington county: I would like to ask the gentleman whether he believes in deep or shallow cultivation?

Mr. Thomas: Shallow all the time, and the shallower the later the season.

Mr. Betz: I would like to ask another question. Do you consider it advisable to always plant three and one-half feet each way?

Mr. Thomas: Yes, sir, I believe it is best to plant on an avearge, three grains in each hill if possible and that would make it the same as about fourteen inches if you drilled it one grain in a place.

Mr. Betz: I have resolved on a little experiment in planting my corn, thirty-eight inches in width one way where I use a check row and planting two grains in place of three. I thereby get ten per cent. additional in the number of rows. Or in other words, I have eleven acres of corn on ten acres of ground, and I have found that I have gotten just as good results. I am now going to try to have check rows so adjusted as to have the rows the same width, or a little narrower one way than the other. My reasons for doing this are simply these: our cultivators are not made wide enough to cultivate the entire amount of ground between the rows of corn and we encounter a string of weeds right through the center. If we have any weeds at all we have them right in the middle of the row and by this method we will get rid of all those weeds in the center of the row and get eleven acres of corn where we would only have ten acres under other conditions. In this way I have gotten the very best results.

President Bradfute: I am sure there are a number of prominent corn growers present and if there is anything new on this subject let us have it brought out.

Mr. S. L. Hill: The matter of fall plowing I think depends a great deal upon the conditions, the location and the kind of soil. I would not fall plow any ground that was not well and thoroughly tiled. In our locality, northwestern Ohio, we have a black loam. They say that one experiment does not prove anything, that three swallows don't make a summer, but by continued experiments in fall plowing, I am doing more and more of it. In Wood county—right adjoining us—they plow almost altogether in the fall and secure very good results. This gentleman's soil may be different from ours, and therefore I think you cannot have any general or universal rule which would apply to all sections of the state. The character of soil makes a great difference in this regard. With the character of soil that we have, especially where it is properly tiled, I think there is no question but that fall plowing is to be preferred. If I had a hard clay soil which was not properly underdrained, such as I have heard Brother Todd speak of, that would only drain about one row of corn on each side of a tile ditch, I would not recommend fall plowing, for of course the results would not be satisfactory. I would have to depend upon surface drainage.

Mr. John Larrimer, of Fayette county, Ohio: I have been trying an experiment on a field for twelve years. It has been fall plowed six times. I have raised twelve crops, six of wheat and six of corn in succession. The crop this year is the best crop ever raised upon that field and it has been plowed for eighty years. My experiment was to determine whether by sowing clover each time I sow wheat and plowing it every other year, I could get as good results as to sow it to clover and then plow it after resting two or three years, and I am very well satisfied that I get as good results from the first method as I could in any other way, and thus lose no crop. The wheat has increased from sixteen bushels per acre to twenty-eight bushels per acre. The corn has increased from forty bushels per acre to about sixty bushels per acre. I expect to continue the experiment for some time and feel that it is safe to do so as long as I get an increased crop.

A Member: Bro. Larrimer, if you lived about fifty years longer you would succeed in getting a pretty good crop.

Mr. Larrimer: I have been at it for over sixty years.

Mr. S. H. Todd, of Wakeman, O.: The paper which we have just heard read recommends good northern seed corn to plant in the southern latitude. I do not just agree with the paper on that line. I believe, as a rule, we cannot have good success only as we have the corn acclimated and raise the kind of corn that will use every day that is given in that latitude to grow corn in. If you have corn in a latitude like this that will ripen in my latitude, you cannot raise nearly as much as you should, because you have two weeks more in your season down here than we have, hence you ought to have a kind of corn that would just meet the season. More than that, the northern seed corn that you get, as a rule, is raised here in the southern climate and is shipped north to the seedsmen and is then bought and shipped back, so that you may have northern seed corn. (Laughter and applause.)

Member from Hancock county: Mr. President: I have been fall plowing for quite a number of years. I live over in Hancock county, in what is commonly called the black swamps, and we very seldom strike an obstacle there in our black ground when properly drained. The frost does our harrowing during the winter. In regard to seed corn I cannot understand the gentleman in reference to knocking off the stub end of the ear. I think it is usually advisable to knock off the tip end of the ear, but I cannot see the necessity of knocking off the stub end. I have been planting corn of the same variety for fifteen years. I use corn that is adapted to the soil and raise as good seed as I did in the start. I have been very successful in raising good crops of corn from fall plowing, and planting by check row. I avoid, as far as possible, this heavy amount of spring work in cultivating, by plowing in the fall. I plow down a good deal of forage. I plowed down this year a meadow which I had not mowed, and I found the ground more brittle and mellow than any other ground which I plowed. I believe in raising clover for fertilizing the ground. I think it is a great fertilizer. I believe we have a good rich corn country, and I think fall plowing is to be preferred, at least in our section of the state. In clay soils I do not think it is necessary, nor do I think it is advisable, to plow so much in the fall, but it is owing to what quality of soil you have.

Mr. J. E. Wing, of Champaign county: I think, perhaps, I am the only man in the state who has turned under alfalfa sod for corn. I want to state that the results of the alfalfa sod have been very successful, but I do not want to convey the impression that alfalfa is a good thing to bring up poor land, for it is not. It will not grow on poor land and therefore it will not improve its quality, but it will enrich good land in a greater degree and more rapidly than anything else we can grow. I have a piece of clay land, which was not naturally very fertile, where we never grew real good corn. That land was well manured, plowed and put in corn. The second year alfalfa was sown thereon; the alfalfa got a good start and grew well for three years. It was mown during the three years nine or ten times—ten times, I believe; four times one year, and three times each of the other two years; it was then plowed up and put in corn without any manuring whatever, and produced eighty-three bushels of corn to the acre; that is, seventy-pound bushels, such as we have in this part of Ohio. That was far in excess of any yield of corn ever before had on that land. In fact, it was the most satisfactory corn that was grown on any part of our farm that year. I have tried experiments similar to this, but not on as large a scale. One experiment I tried was on a third of an acre. This land had never been in corn, but had been used for pasture. Potatoes had been grown upon it for one year. No manure was applied at all. Alfalfa was sown in 1891 and was mowed for four years; then the land was plowed up and put in corn. The rest of the field yielded about sixty-six bushels to the acre, whereas the one-third of an acre yielded thirty-six bushels. You can see that that was an astonishing growth of corn; such as I had never had before on any part of the farm. I think it is safe to say that if you can grow alfalfa, you can depend upon good corn. That is not saying that all of you can grow it, because it will not grow everywhere in Ohio.

Mr. J. W. Kellogg, of Madison county: There is no subject in which I am more interested than in preparing land for corn crops. I have practiced fall plowing. I break my corn land in the fall, and I have been actively engaged in farming for some forty years. My experience does not embrace such a period as Bro. Larrimer by one-third. But I will state that we fall plowed considerably some years ago, when I thought it was just the thing, but I am frank now in admitting that I do not so much favor it, and the consequence is that I do not plow corn land so much in the fall of the year as I did formerly. I think that what we call early breakage, that is, commencing in February, or March and April, is the best and the cheapest. We then have the frost which should come during those months, which puts the land in good condition. We can afford to plow the land just a little wetter than we can later on, as it is not considered injurious to the soil; not too wet, but wetter than when the season for frost has passed. That is my preference, to break the soil early in the spring, commencing, as I said before, in February or March, or as early as the season will admit.

I differ in one one respect, or rather I am at a loss to understand the prolongation of the pollen, as referred to by our friend who has just addressed us on this subject, that is from the replant. Now I do not suppose under any circumstances any one would recommend a replant. We always seek to avoid that, if possible. If it does any good, all right. Now as to the planting of corn, I have learned from experience, and wish to emphasize the fact, that, in my opinion, shallow planting is the correct thing. I think we often plant too deep and thus lose the fertilizing matter that is contained in the seed and in consequence have a feeble plant.

Mr. Thomas A. Burns, of Darke county, O.: Our soil is almost all glacial in its character. We have some farmers that are still sticking to fall plowing regardless of the texture of the land. Where land is of a clayish nature, which will run together, it will become hard from fall or winter plowing. Where it is of a more sandy nature, or a deep black loam, and thoroughly drained, as all land should be, early spring plowing, for instance February and March, we find to be the best, especially when it will freeze once or twice after having been plowed. Now in regard to seed, I sent away to Wakeman a few years ago, and I believe I must have gotten my seed from Bro. Todd before someone else got there. It was called the Early Mastodon. I received it at my home in Darke county and planted it on the 2d day of May. We had one hundred and twenty days after that corn was planted before we had any frost and yet it had not ripened. So much for your northern seed in a southern latitude. I have found the best way is to raise seed corn in our own neighborhood. I think from necessity that corn should be acclimated.

In regard to the drag and the roller; I have neither a drag nor a roller on my farm, but I do not allow my cattle or my horses to tramp over land which I expect to cultivate. That is why I am able to do away with the roller and the drag. I say to you, if you keep your cattle off your land when it is inclined to be wet, you will not need either a drag or a roller. A good spring-toothed harrow is sufficient. That is the way I have gotten my land in shape, and I believe I raise as good corn as any man in Darke county, and you know we are the banner county of the state for corn and hogs.

Mr. Todd: I want to say that the gentleman from Darke county did not get that corn from me, but there is a seed store up there, and I have no doubt he bought his corn at that place, and that the northern seed corn was raised a good deal further south than he is. He made just a little mistake in getting it a little north of the latitude where it will ripen.

Mr. Burns, Darke county: The man I got the corn from represented that he raised it himself, and that it gave a yield of one hundred and thirty bushels per acre.

Mr. M. C. Thomas: Just a word about pollenizing; if you plant the tips of the ear and the middle of the ear the stalks produced from the tips of the ears will not ripen as quickly as those produced from the middle of the ear. But if you shell off the tips of the ear and just plant the middle of the ear, it will all ripen at once. I overcome the difficulty with reference to filling out the tips of the ears by putting in a few replants and thus prolonging the pollenizing period.

Mr. Burns: I would like to ask by what means you know that?

Mr. Thomas: By experience.

Mr. Burns: You have demonstrated it have you?

Mr. Thomas: Yes, sir.

Mr. Burns: I have heard it said as the result of experiment, that if you shell the tips of the ears off and just plant the tips of the ears that the ears will not fill out, but it has seemed desirable to me to get the corn of even size as nearly as possible so that it will drop evenly. I did not suppose, however, that there was that much difference, and therefore I have asked the question for information.

Dr. W. I. Chamberlain: I am not a corn grower but I am very much interested in the question of fall plowing. I notice that this whole discussion has been mainly upon the question of fall plowing. That is a question that relates to other crops such as potatoes, etc., as well as the corn crop. I conclude from what has been said that in clay soils, tile drained, we do want, and we want very much, the leavening effect of the frost, and we do not want the effects of the powerful fall rains. This year in November we had almost eight inches of rain, and that would have worn down and puddled the land a good deal. The solution in my own case is this, my land is all tile drained—all that I plow—and, if possible, I plow in December because the teams are idle then; I can not well plow in February and March for it is very apt to be frozen at that time, and furthermore my teams are at work in the sugar camp. I think this is the solution of the whole question; where the ground is underdrained, either naturally or by tile, it is wise to get the effect of the frost, and it is not wise to get the effects of the heavy rains in the fall of the year, therefore I think December plowing or February plowing, where it can be done under proper conditions is the best. Of course in Northern Iowa, central Iowa, all over Wisconsin, northern Illinois and all over Minnesota, they plow altogether in the fall, and they have their wheat all sown before it has thawed three inches deep where it freezes three feet deep. There, fall plowing is a necessity. In northern Ohio I am inclined to think that fall plowing on the whole pays, because you need not get the puddling influence of excessive rains by plowing later. But if you wish to get the benefit of the frost you should plow in December or in February or in the early spring.

Mr. Morrow, of Preble county: I do not care to take part in this discussion, but I would like to get a little information from these gentlemen who are in favor of fall plowing. If that is the correct principle, I would like to know what is the good of this theory that we have heard so much of, of late years, in regard to protecting the soil, having it mulched, which it has been said prevents the leaching out of the fertility of the soil. Some people think there is a good deal in that theory. In fact I am willing to say that I think there is myself. I would also like to inquire if we are to go north or to go some place else to get good seed because it runs out at home, why is that, and how does it happen? It is well undertoood, I believe, that we can take up almost any kind of an animal on our farms and improve it by judicious feeding and cross breeding, and it is said what is true of animals is true of the vegetable kingdom. If that is so, then why can we not raise our own seed corn, and if it is not true, why is it not true?

Mr. Hill: In regard to planting corn, I would like to say that eastern seed growers from Vermont, New Hampshire, and other states usually get, through the seed houses of Boston, their seed corn from Ohio. I have known as high as two hundred orders in our county and adjoining counties for seed corn to be furnished under contract to Boston seed houses for York State seed corn. That I think is true for this reason; we have a longer season, and are thus able to produce a better quality of corn; by reason of their short seasons, the sides of the kernels and the ears deteriorate in time, so that the corn is of no account for seed. For this reason thousands of bushels of our corn are contracted for every year through western seed houses by eastern seedsmen. I do not know why the same may not be true of softer varieties of corn by changing back and forth. Of course you can not bring corn from South Carolina or south of the Ohio river and bring it to the shores of Lake Erie and make it a success. But the Early Mastodon, which a few years ago it was supposed could not be raised anywhere only in the Miami bottoms, has proved to be a very good corn with us. We have what we call the Early Mastodon in Erie county and it has matured perfectly, and we have raised thousands of bushels of this corn for seed.

Mr. Scott: I live down in Jefferson county, next to the Ohio river. We have not such level lands as you have about Columbus and west of Columbus, and consequently we have to be a little more careful how we handle our lands, especially in the matter of fall plowing. I grow nothing but clover. I grow no timothy whatever and I think I get better results by far from plowing late in the winter, that is towards the 1st of April, or the middle of March, using clover entirely, and generally allowing the entire amount of clover from the fall growth to be plowed under. I use that fall growth clover to put my manure on during the winter. I haul it from my stables and barns and spread it on the clover which I think helps absorb the liquid from the manure and takes it into the ground more readily judging from the condition in which I find the soil under this blanket of clover. I find no trouble where I grow clover in this way upon my soil in getting along without a drag or a roller. The soil is always loose and in excellent condition. I have sometimes thought by plowing late—extremely late—allowing the clover crop to get a good start and turning right in about the first week of May and planting it almost immediately, that I have gotten some of the best results I have ever gotten in corn culture. Of course I know the farmers west of Columbus, who have large and extensive farms, have a great deal of work on hand, at that time of the year, and it is necessary, it seems, to plow in the fall; but I think I would lose a great deal of the fertility not only in the escape of some portion of the fertilizing material during the winter season, but by washes if I followed such a course. Down in eastern Ohio we have to be exceedingly careful in preserving and protecting the fertility of our soil. We do not have quite as good land as you have, especially in the Miami Valley. In reference to the subject of seed corn, I have used the Leaming for a number of years in this way: I have found that the Leaming corn was too late for our climate, which is about the same latitude as the city of Wheeling. We have had a corn in that section of country for seventy-five years—of course, I have no knowledge of that myself, but old farmers there tell me that that native corn has been grown in that locality for seventy-five years. It was an early corn, but I never liked it from the fact that it was white on the surface of the corn, although yellow down in the grain. I found by hybridizing these two for a number of years that I have secured an excellent quality of corn which ripens and matures just at the right season for me. I agree with Bro. Todd and some of the other gentlemen here, that we do not want to go too far north or too far south or too far east or too far west for our corn; especially too far east, because in eastern Pennsylvania they have a corn which seems well adapted to that particular locality and which has an exceedingly large ear but does not seem so well adapted to our locality. In the way I have suggested I have been able to procure the best results.

Mr. S. H. Todd, Wakeman, O.: I would like to ask one further question relative to the pollen growing out of the corn on the end of the ear. I am not satisfied with what we are being taught on that line through the agricultural papers. A good many advocate that we should plant one-fourth of our corn after the other corn is up so as to pollenize the three-fourths. The question with me is, "what is going to pollenize the one-fourth?" It seems to me that that is right in order; that that is a stumbling block to the raising of corn, according to their theory. So far as I can remember my father raised a kind of corn that was noted for its running the corn all over the end of the cob, and he would always shell off one inch of the end of that ear before he would plant it. He planted for thirty years, that same corn, which grew to be called the Todd corn, and as I remember it I can see those ears tipped over, at the end of thirty years, just as well as they were when he first commenced planting it. If it had been a fact that it runs the corn down on the cob by taking off the tip of the ear wouldn't it have run the corn all off of those cobs in that time? (Laughter and applause.)

Mr. Dickey, Fayette County: I remember reading a little article, published in the Breeders' Gazette, of a man who carried off a premium of five hundred dollars for raising the most corn to the acre this fall. He placed two kinds of corn in his corn planter, one kind in one box and the other kind in the other box. One kind of corn was two weeks later than the other, and he claimed that the advantage of this way of planting corn was that every stalk would produce an ear. He got the premium.

Mr. Todd: That was because he was practicing cross-breeding. That is the same way we get all of our premiums now.

President Bradfute: I would like to ask if Professor Hickman, of our Experiment Station, has had any experience in planting the tips of ears and also as to the replant. If he has had any experience on either of these subjects we would be glad to hear from him.

Professor J. Fremont Hickman, of the Ohio State Agricultural Experiment Station: My voice is hardly in a condition for me to do much talking, but I will say a few words upon the subject. Some of you may have read our recent work published last April or perhaps last March, in which we conducted an experiment lasting over nine years, using the point grains consecutively year after year for nine years with the butt grains and then comparing the two with the middle grains. At the end of the nine years' experiment we found no variation either in the yield or in the conditions of maturity. I have then to say simply in conclusion that it seems a well settled fact, that by the use of either the point grains or the butt grains you do not run the corn out, but there is always a disadvantage in planting the butt grains and the tip grains which grows out of the variation in the size and consequently by using the butt, middle and point grains indiscriminately you get an irregular stand and it makes considerable thinning out necessary.

A Member: A gentleman seated here says that the tip grains will not ripen as early as the other grains. Do you know anything about that?

Professor Hickman: It has made no difference whatever, so far as we have been able to observe: We have found, as I say, that there is no variation between the butt, the middle and the tip grains as to the time of maturity.

Mr. Theo. F. Longenecker, of Montgomery County: I have carried on experiments for about twelve years in selecting corn of certain types and in varying that same type, and I have found by prosecuting this work, in ten or fifteen years we can have a dozen different types of corn by selecting with reference to particular types. If any of you gentlemen wish to carry on an experiment of this kind, go into the corn field before husking time and select stalks that have certain characteristics; then, after you have gathered this corn, take the ears that have a certain character and you can grow corn, the ears of which have crooked rows in a ew years. You can take the crooked ears and develop them into straight corn; you can get corn that will fill out pretty well at the end of the year if you select ears that are well filled out at the tip. The tendency to vary in a certain direction seems to increase if we follow it up, and as we follow that tendency we develop types of corn which have distinct characteristics, just the same as stock breeders develop their stock.

Mr. Jamison: In reference to shelling off a part of the ear, it was always my father's custom to shell off the small end an inch or two. Some four or five years ago, in planting with a two-horse planter, I noticed that I had a great many one stalks, and I always look out for some reason. I remember in an eleven acre field it took two of us three days to replant it, on account of so many hills having but one stalk. I concluded that the large grains on the butt of the ear were the occasion of the one stalk. Since that I have been shelling an inch off of each end of the ear of corn. In that way I secure even dropping. Now I have noticed that sometimes the tip of the ear is not properly filled out, but I have never noticed any difference in the filling out of the large end of the ear. Furthermore, I have noticed this, that in a dry season, when the fall has been very dry, there will be more ears with the small end not filled out than there will be when the season is favorable. My conclusion, therefore, is that to shell off either end of the ear does not in any manner influence the product afterwards. If the ear is perfect that you use for seed you can expect a perfect product, if the season is favorable to produce a perfect ear.

In reference to fall plowing, if you will allow me a moment on that subject. I tried fall plowing once, before I had tile drained my land, and I said I would not try it any more until my land was drained. I now have my land drained and I have been fall plowing. In the winter of 1895 I plowed a piece of land the day before Christmas. Part of that field was what you might call white oak clay land; the rest had black streaks through it and was what you might call burr oak land. The black part of the land was so loose in the spring that it needed no cultivation at all to prepare it for corn, while the clay land was very solid, excepting a few feet directly over the tile drain. There was no water that stood on that field at any time twenty-four hours after a rain. At that time I had no disc harrow to loosen the clay land; I used what is called the Acme harrow; consequently I did not get that hard soil loosened more than three inches. Now as to the results. It gave me a crop of corn in 1896, with the best quality of corn on the solid clay land. The corn was not as good on the black soil (which, seemingly, was in the best possible condition when I planted the corn), as it was on the hard clay soil. Another reason why I like to plow in the fall or the winter is this: For instance, I have a field of clover sod—clover that yielded about eighty bushels of seed—the rest of that field is covered with barnyard manure from stables in town and from my own stables. Now, if I do not plow that until late in the spring, and turn over that clover straw, the result is that if it turns dry I will not get any crop of corn. If I could have gotten it plowed down previous to this time, or can do it this month, then I feel comparatively safe as regards a crop. Consequently you cannot follow any man's rule in regard to fall plowing, but must decide the matter by your own experience, as it applies to your own particular case. Theory is all right and it helps a man to get at the practical, yet when you come to this matter of fall plowing, your own practical experience is worth more to you than hundreds of theories from other men.

A Member from Pickaway County: I think that fall plowing gives an opportunity for the frost to work upon the ground, which has a tendency to mellow and improve the soil. In planting corn I prefer running the plow ahead of my planter, getting my corn a little deeper in the ground than I would otherwise be able to do. The first cultivation I give it is with the harrow. This season, while we have had a drought, still we have been able to have very good crops, running from sixty-five to seventy bushels per acre.

President Bradfute: Now, gentlemen, I would like to continue this discussion, which is undoubtedly very profitable to all, but we have some other interesting addresses on this afternoon's program, which we must not neglect. This is what is called a Farmers' Institute, where we can collect the experiences, opinions and ideas of the various farmers of the state, and such discussions as have been indulged in this afternoon will prove to be of great benefit to all interested in agricultural pursuits. I am sure there is no one here who has not profited by this discussion. That is the object and purpose of a Farmers' Institute.

I will next call upon Mr. Selby, who has prepared an address upon a subject that has been creating a great amount of interest, not only among the farmers of the state of Ohio, but throughout the United States. He will now deliver an address upon the subject of

THE BEET SUGAR INDUSTRY IN OHIO.

By Prof. A. D. Selby, Wooster, Ohio.

Ohio is certainly entitled to consideration in the establishment of this new industry. It may not be known to all, however, that the best beet sugar industry in Ohio had an interesting and by no means brief history, which will bear reciting.

About 1834-5 Mr. Joseph Sullivant, of Columbus, Ohio, associated with him other gentlemen to engage in beet sugar production. (Ohio Agricultural Report, 1859, pp. 503-506.) The tests were continued during two years. The seed of French sugar beet was obtained through the Patent Office. The first year one-half acre was planted and with such gratifying yields (thirteen tons from the half acre) that about twenty acres were planted for the second year. An average yield of thirty tons per acre was thought possible. There was failure to secure crystallization of the sugar contained in the beets and the project of sugar manufacture from beets was at that time abandoned. At that early date it appears that a larger single experiment in sugar beet culture was actually undertaken than has been tried at any time since.

With the beginning of the war of the rebellion and its attendant sugar scarcity, attention was again directed to sugar beets, despite the prominent claims of sorghum for this purpose. In Secretary Klippart's Agricultural Statistics published in the Ohio Agricultural Report of 1860, (p. 12) he makes reference to the manufacture of sugar in small quantities from the beet, by Prof. A. Mot, of Columbus, during the year. We find again that this same gentleman, Prof. Mot, presented a memorial to the Ohio State Board of Agriculture upon January 7, 1862, concerning sugar production in Ohio, he having been granted the previous day, January 6, a gratuity of $20.00 for his experiments in the production of beet sugar the previous year. Secretary Klippart records, in this connection, that this gentleman is the first one who has succeeded in obtaining a good article of crystallized sugar from the beet root in the United States. In this memorial of Mot's, after reciting the familiar general arguments in favor of home production, he states:

"The seeds for the subscriber's experiments during the last four years were mostly supplied by the obliging secretary of your board.

The calculated production of beets averaged thirty tons to the acre; a parcel of seeds planted in the garden of G. M. Parsons, Esq., of Columbus, yielded at the rate of sixty-five tons to the acre; a specimen of this crop is herewith submitted, with the offer to make sugar therefrom in the presence of the board.

Experiments in making sugar were more or less successful, according to the kind of beets; the white French beets gave the best results, the percentage was low, owing to the want of implements; it was in average, four parts of sugar and six parts of molasses in one hundred parts of beets.

The specimens are:

No. 1. Raw beet sugar in progress of crystallization; the dark color belongs to the molasses; this being removed the crystals will appear with a light brown color, similar to No. 3.

No. 2. Beet molasses drained from specimen No. 3, and filtered through French woolen stuff of the adjoined pattern.

No. 3. Brown beet sugar extracted from white French beet, raised near Newark (Cherry Valley), Licking county; seeds from the Board of Agriculture.

No. 4. Clayed beet sugar partly refined, from white French beet, raised in the garden of G. M. Parsons, Esq., at Columbus, O. The refining operation could not be perfected for want of machinery."

The same gentleman later petitioned the legislature for encouragement. The senate's standing committee on agriculture submitted an extended report (see Ohio Agricultural Report 1861, 196-205) which is interesting to read at this time. It will not be possible to quote from this report at any great length. The idea of farm sugar making practiced in the case of maple sugar, contemplated and encouraged with sorghum, after its introduction in 1854, seems almost wholly to absorb the attention of the committee. The conclusion of this report, however, will bear quoting:

"To sum up, France produces about three hundred million pounds of sugar and half as much molasses, which, together, are worth thirty million dollars; on which the government lays a tax of 36½%, amounting to ten million dollars.

We have seen what means are employed to bring about this result, and,

Whereas, Similar causes produce similar effects, the committee propose to adopt energetic means to forward the prosperity of the state and therefore offer the following resolution:

Resolved, That the State Board of Agriculture is authorized to offer a premium of one thousand dollars to the first person who shall have planted, within the state of Ohio, no less than five acres of sugar beets; and manufacture therefrom no less than five thousand pounds of good, fair, merchantable, crystallized brown sugar, and a specimen of white, refined loaf sugar, of no less than twenty pounds in a single uncompressed block. The premium to be awarded on condition that the winner shall open his factory for public inspection, and instruct one apprentice at the choice of every Agricultural Society of the state."

I am not clear as to the result of this offer.

We have next a long interval of inactivity to record. Doubtless many were growing beets to feed. From 1878 to 1886 crops of field beets were grown upon the farm of the Ohio State University. The earlier crops were grown under the direction of Charles E. Thorne and the latter under Dr. H. A. Weber; these are recorded simply, as they were a preparation for sugar beet growing. In 1888, 1889, 1890 and 1891 crops of sugar beets were grown upon the same farm by the Ohio Experiment Station. These were used for feeding purposes only, in earlier years. (Report 1890, pp. 154-170).

In the Ohio Agricultural Report for 1862, Secretary Klippart refers to the introduction of a new industry (beet sugar) into Ohio "during the year 1862." It would appear that Prof. Mot continued his work during that year, "raised a crop of beets and built a small factory." Two kinds ot beet seed had been procured from France and Germany. The former is known as the Improved Vilmorin and is rated at 17% of sugar; the later is the Imperial Silesian and said to contain 13% of sugar. The original cost of the seed was fifty cents per pound, but the freight and other accumulated items raised the price to one dollar a pound. In these operations ten acres of beets were grown two miles from Newark, Licking county, in a district called Cherry Valley. The cost of growing and harvesting the ten acres is placed at two hundred and sixty-five dollars and sixty-five cents or twenty-six dollars and fifty-five cents per acre. The yield was estimated at about ten tons per acre. The yield of product, sugar and molasses, is recorded as one hundred and nineteen pounds per one thousand pounds of beets, or 11.9% of the two, a little less of actual sugar. The labors of this pioneer, a teacher in the public schools of Columbus, seem to have been without avail in a permanent establishment of the beet sugar industry in Ohio. It remains to be seen how much better result will follow later efforts.

The tests of the sugar producing capacity of Ohio grown sugar beets were not made by the Experiment Station till 1891 and 1892. These sugar examinations were doubtless stimulated through the analyses made by the U. S. Department of Agriculture.

With the seed distribution of 1890 by the Secretary of Agriculture we have the beginning of the third stage of the beet sugar industry in Ohio. For that year, analyses of fifteen samples from six counties gave the following rather low results:

County.	Number samples.	Per cent. sucrose in juice.	Per cent. sucrose in beet.	Purity.	Average weight of beets.
Butler	1	9.7	9.2	76.4	1,017
Erie	1	9.3	8.8	71.5	305
Hamilton	1	13.1	12.4	80.9	458
Sandusky	3	12.9	12.3	76.9	935
Trumbull	7	10.1	9.6	77.9	808
Van Wert	2	6.6	6.2	67.3	370
Average	15	10.3	....	....	....

Certainly a low sugar content.

(United States Department of Agriculture, Division of Chemistry, Bulletin No. 30. Experiments with sugar beets in 1890 by H. W. Wiley, p. 31.)

Under the same auspices of the Department of Agriculture, sixty-six samples of sugar beets were analyzed in 1891. These were from twenty counties and give, omitting Paulding, the following results:

(Bulletin 33, Division of Chemistry, 1892, pp. 47–49.)

Table giving results of analyses of sugar beets grown on forty-nine farms in nineteen counties of Ohio in 1891.

County.	Number of samples analyzed.	Sugar in juice.	Purity coefficient.
Ashtabula	2	13.88	82.1
Auglaize	2	10.50	69.2
Coshocton	1	11.83	76,9
Clark	7	10.90	70.8
Erie	18	12.15	76.7
Geauga	1	14.00	78.5
Hancock	4	17.15	76.9
Harrison	3	12.82	81.3
Henry	2	11.88	74.4
Lorain	2	12.43	77.3
Licking	2	12.10	69.4
Marion	1	12.25	76.1
Meigs	1	9.55	77.8
Montgomery	3	13.00	76.7
Morrow	2	17.30	85.7
Ottawa	1	14.40	77.3
Seneca	1	13.23	83.2
Trumbull	10	13.82	80.2
Wyandot	1	12.85	76.3
Average by counties	....	12.95	77.2

Dr. Wiley's averages for Ohio are solids 16.23 per cent., sugar in juice 11.93 per cent., purity, 73.5 per cent. For the same year seventy-one samples from Indiana gave averages of solids 15.97 per cent., sugar in juice, 12.32 per cent. and purity 76.9 per cent. respectively; while sixty-two samples from Nebraska yielded solids 16.22 per cent., sugar in juice 12.37 per cent.. and purity 95.3 per cent. in averages. The latter slightly higher than those of Ohio in sugar and purity. In the same year, 1892, the Ohio Experiment Station made twenty-four analyses of sugar beets from seven counties. (Annual Report, 1882, XLI.) Five analyses of the Vilmorin variety, yielded 6.49 per cent. to 14 03 per cent. of sugar in the beet. Five samples of the Kleinwanzlebener sort gave from 10.73 per cent. to 14 21 per cent. of sugar in beet, averaging 12.73 per cent. sugar, while the Vilmorin averaged but 10.24 per cent. of sugar in the beet. The results of other varieties were very low compared with those given.

The investigation previous to 1893, therefore, left the beet sugar question in Ohio practically where Prof. Mot's report had placed it, an undemonstrated probability for the northern half of the state. With repeal of favorable national legislation the matter was left in abeyance until the prospective and actual enactment of the present Dingly tariff bill put the factory question once more on a basis of possible profit.

In January, 1897, Director Thorne prepared Bulletin 75 with the title "Beet Sugar Production," and sugar beet seed was distributed by Secretary Wilson almost immediately after his introduction into office.

Under this arrangement, Secretary Miller of the Ohio State Board of Agriculture sent out nine hundred and twenty-six packages of sugar beet seed to citizens of Ohio. Doubtless a considerable quantity was sent direct from the department in Washington. Sugar beet seed was also distributed by the Jarecki Chemical Co., of Sandusky, O., by Armour & Co., of Chicago, and possibly by other fertilizer firms. Sugar Beet Associations or Beet Sugar Companies and the Boards of Trade in certain cities likewise purchased and distributed sugar beet seed in Ohio last spring. The samples of sugar beets from these seeds were, for the most part, sent to the Experiment Station for analysis. The Jarecki Chemical Co. is reported to have made about one hundred and thirty analyses Dr. H. A. Weber has published some made by himself, while others have probably been made, though, at present, not available. It is my purpose to speak of the results of the six hundred and twenty-eight analyses made at the Experiment Station, chiefly by Mr. L. M. Bloomfield, assistant chemist. These are from sixty counties and yield the average results shown upon Table II.

TABLE II—SHOWING SUMMARY OF TABLE I.

County.	Number of samples.		Average weight of beets, grammes.	Total solids in juice, per cent.	Sucrose in juice, per cent.	Purity, coefficient.
	Analyzed.	In average.				
Ashland	4	4	831	16.7	12.7	76.0
Ashtabula	2	2	679	18.0	14.9	82.8
Auglaize	9	6	1,128	18.7	14.4	77 0
Belmont	1	1	660	19.1	16.6	86.9
Champaign	1	1	825	17.0	13.2	77.6
Clark	11	11	610	17.9	14.1	78.7
Columbiana	1	1	610	22.0	18.4	83.6
Coshocton	4	4	860	17.7	12.9	72.9
Crawford	7	7	1,095	17 9	13.8	77.1
Cuyahoga	4	4	894	17.1	12.9	75.5
Darke	44	44	864	17 3	13.3	76.9
Defiance	23	23	851	17.6	13.7	77.9
Delaware	4	4	559	18.8	14.9	79.3
Erie	1	1	1,406	18.6	15.0	80.6
Fairfield	5	5	599	17.1	12.8	74.9
Fayette	2	2	620	18.5	14.6	78.9
Franklin	5	5	524	19 1	15.3	80.0
Fulton	24	24	1,065	17.8	14.1	79.2
Geauga	6	6	694	19.2	16.3	84.8
Green	11	11	1,285	14 8	9.9	66 8
Hardin	4	3	796	16 3	12.1	74 2
Henry	33	25	810	18.9	15.3	80 9
Highland	1	1	840	19.3	13.2	68 4
Hocking	1	1	1,521	12.2	7.2	*59.0
Holmes	6	6	680	16.8	13.6	81.0
Huron	1	1	303	21.0	16.0	76.1
Knox	4	2	642	19.4	15.9	81.9
Lake	5	3	789	18.0	14.9	82.7
Licking	11	10	562	15.9	11.9	74.9
Logan	2	2	779	16.1	12.8	80.0
Lorain	1	1	520	19.7	16.0	81 2
Lucas	32	30	889	18.2	14.3	78.5
Madison	5	5	711	18.6	14.3	76.8
Marion	7	1	555	16 0	12.4	77.5
Medina	6	5	947	18.2	13 9	76.2
Mercer	1	10	1,119	17.1	13 2	77.2
Miami	2	12	773	16.6	12.6	75 9
Montgomery	3	3	755	16.1	11 8	73 5
Muskingum	5	5	566	18.4	14.4	78.2
Ottawa	13	13	694	19 9	15.7	78.8
Paulding	9	9	802	19.5	15.6	80.0
Perry	1	1	127	23 6	19.1	80.9
Pickaway	1	1	710	20.2	16.5	81.6
Pike	1	1	595	18.0	14 0	77 8
Portage	2	2	1,554	13.3	9 3	*69.7
Putnam	19	19	958	17 1	13.1	76.5
Richland	2	2	496	19.9	16.6	83.4
Ross	31	30	697	17.6	13.5	76 6
Sandusky	3	2	812	18.6	14.8	79.6
Seneca	10	10	762	19 1	14.8	77.5
Shelby	8	8	607	17.5	14.0	80.0
Stark	8	8	712	18.9	15 3	80 8
Summit	28	23	684	18 3	11.7	80 2
Tuscarawas	4	4	865	18.7	14.8	79.1
Union	2	2	1,077	19.7	15.9	80.6
Van Wert	21	15	1,064	17.1	12 5	73.1
Wayne	97	89	787	17.2	13 9	80.7
Williams	3	3	979	20.2	16.2	80.2
Wood	26	24	777	18.4	14 4	78 3
Wyandot	1	1	605	18.9	15.1	79.8
Southern section	69	67	892	17.0	12.8	75 3
Middle section	146	132	924	17.8	13.9	78.0
Northern section	392	355	834	18.0	14.3	79.4
Entire state	†607	554	867	17.8	14.0	78.7

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*Not included in average of State.

†Some samples were received without name or address.

The fuller details, including everything known of the samples, are presented in Table I of Bulletin 90, which will be sent from the Station to all who apply. From the table we learn that of sixty-nine samples received from the Southern Section (as divided by the weather service) sixty-seven samples average:

	Weight.	Solids in juice.	Sugar in juice.	Purity, coefficient.
Southern section (69) 67	892	17.0	12.8	75 3
Middle Section (146) 132....................	924	17.8	13 9	78.0
Northern Section (392) 355.................	834	18.0	14.3	79 4
Entire State (607) 554.........................	867	17.8	14.0	78.7

The factory standard is 12 % of sugar in the beet (12.63 % in juice) and a purity of 80%. Compared with analyses of former years, and considering the greater number of analyses made, I think we may take satisfaction in these results. Let us now consider them somewhat more in detail.

You will perceive that of the northern section we have no samples from Allen, Hancock, Mahoning and Trumbull counties, and that from some others the number of samples in the table is limited (viz. Erie, Lorain, Wyandot etc). In all the others the results are favorable, except from two counties, (Van Wert and Portage) where the results are not. It therefore appears that upon suitable soils, sugar beets of a high factory standard can be produced throughout the northern section of Ohio. Three districts are notable in this section as having made the most extensive tests and given the best results as a whole. They are the western or northwestern, in the counties of Lucas, Wood, Fulton, Henry, Williams, Defiance, Paulding, and Putnam; the northern in the counties of Ottawa, Erie, Sandusky, Seneca, Huron, and Lorain; and the eastern in the counties of Cuyahoga, Medina, Summit, Wayne, Stark, Portage and Columbiana. Holmes and Tuscarawas of the middle section also come naturally into this district, while Ashland and Richland may be included in either the eastern or northern. The districts outlined offer inducements to the location of Ohio Beet sugar factories.

In the middle section, the results are but slightly less favorable than in the northern, the purity coefficient being slightly lower, though the samples are much fewer and rather more scattered. Out of the total of one hundred and thirty-two samples, in the averages forty-four samples are from Darke county, eleven from Clark, twelve from Miami, eight from Shelby, ten from Mercer and six from Auglaize; or almost three-fourths of these samples are from the three tiers of the western counties in this section. Of this group, Clark county samples appear slightly in the lead. Good results are shown from Franklin, Madison and Delaware counties, as well as from Muskingum, Perry and Belmont counties. Holmes and Tuscarawas gave favorable results while their position and climate place them more nearly in the northern section.

In the southern section, of sixty-seven samples, thirty are from Ross county where a good deal of interest has been taken. In the whole of the section, good beets can be grown as the averages of Ross and other counties show. Here it is all the more essential to work hereafter with the design of growing forty thousand one pound beets to the acre rather than to produce a smaller number of overgrown ones.

Many of the samples of sugar beets received the past season were badly grown and of too great size. The sugar beet is a thoroughbred and requires thoroughbred handling. The ideal beet is one that shall have an average weight of about one pound (four hundred and fifty-three grammes) and shall have grown and developed without protruding from the ground. The sunshine needed is upon the leaves, upon the beets thrust above the earth it has an unfavorable effect. The ideal sugar beet has, furthermore, a conical point with a single "tap" root and without prongs. The ideal sugar beet, further, must have a requisite per cent. of sugar in the beet juice with a standard purity. Factories require a minimum average of 12% sucrose in the beet (12.63 % in the juice) and a purity coefficient of 80 %. The meaning of the latter is simply that the sugar in the beet should be 80 % of the total dissolved solids or more than that. If total dissolved solids are 18 % and sugar is 14.5 %, then the purity coefficient is 80.5 %. We speak here of apparent purity; solids 15 % and sugar 12 % give a purity of 80 %. These characteristics of the ideal thoroughbred sugar beet are obtainable collectively by very like measures for each. First of all we must have thoroughbred seed of some variety taking highest rank in sugar production. The German and French varieties, named Kleinwanzlebener and Vilmorin, respectively, meet these requirements as does probably another German sort, Brabant. Growers will do well to confine themselves to a single one of these named and to the Kleinwanzlebener alone, securing the seed when purchasing through some recognized agents of the seed producer. The desired size and form, as well as sugar content and purity, will be secured by early and close planting on deeply prepared soil with proper attention to the growing of the crop. The deeply prepared soil means an available depth of twelve to fifteen inches. Ths sugar beets in this diagram (chart) were thirteen and one-half and fourteen and one-half inches in length. A clover sod plowed early and subsoiled will offer favorable conditions for tillage and culture. Where a subsoil plow is not at hand, follow the first furrow by a second with turning plow, in bottom of furrow. The soil being put in good tilth and harrowed again just before planting, the ground is ready for the seed when danger of frost is past. We are now confronted by the question of how much crowding to provide for. If size of beets is kept down to the one pound weight, the beets must be grown close together. Close planting and crowding means richer beets. It does not seem wise to undertake the European, fourteen inch, system with its large amount of hand cultivation. The rows should be as close as possible and cultivated with a horse. Prof. Hickman has suggested that twenty inches is a good distance for rows, better even than twenty-four inches. The closer rows will enable the farmer to grow a larger number of beets and by crowding in the rows to reduce the size of the beets. It will be safe to count upon growing a sugar beet to each square foot of surface. That means forty-three thousand five hundred and sixty plants to the acre. It will be possible to attain this number and to exceed it slightly with twenty inch rows, while rather difficult to do so with twenty-four inch rows. The ground may be marked with drag or sled marker and the seed put in by hand or with drill, so that seeds are three to four inches apart in the row. If put in by hand the seeds may be covered and earth pressed down with foot; with drill, pressure is secured by the roller. The seeds should be covered about one inch deep. With the hand planting, seven to ten pounds of seed will be enough to plant an acre, but with drill it is estimated to require about twelve pounds or more according to the setting of the seeder. In France it is reported that an average requirement of twenty-six pounds of seed per acre is found to hold. It certainly seems from the information at hand that fifteen pounds of good seed per acre is a surplus rather than a deficiency, if evenly distributed in the rows with a drill. In hand planting a dropping tube with funnel at top will save stooping, and as before stated, there is economy of seed in this method. Director Thorne has suggested that this method may be so applied as to reduce cost of thinning as it does cost of seed.

But the seeds once in the ground the plants will scarcely show much above the earth before the lapse of two weeks. Thorough destruction of weeds before planting will, therefore, prove of great help at this stage of beet culture. Cultivation should begin promptly. Breed's weeder, or other two or three-row tool, should certainly be available for this cultivation. Where the plants have four leaves they are ready to be thinned. Pointed hoe and hand are recommended for this purpose. Here comes a point of great importance; how thick to leave the beets. In loamy or sandy soil it appears to me they should be left four to six inches apart, while in clay soil they may need more in the row. This is the time to prevent overgrown beets. If left close together, the beets will not be too large and if the stand is poor, replanting or transplanting will be necessary. Transplanting commonly gives forked and bad roots.

If planted the first of May and properly cultivated the beets shou'd mature by the 10th to the 15th of October. This maturity will be shown by yellowing of the lower leaves and a general lighter color of the foliage. Do not be anxious to have the beets tested too soon. Few fields will mature before the middle of October and many not till after the first of November. The harvesting and storing of the beets is difficult; while well grown sugar beets are in the ground, a plow or special tool will be required in gathering them. The tops should be at once removed, and for factory use the topping is required to be done at the bottom of the lowest leaf scars. With large areas it would seem advisable to top the beets before plowing them out.

What will be the cost of growing an acre of sugar beets and what yields and prices are to be expected in Ohio? Upon the cost of growing I cannot do better than to quote from Bulletin 75.

"Beginning with 1878, field beets, including both mangolds and sugar beets, were regularly cultivated on the farm of the Ohio State University in lots of an acre or more each year, the first four crops being raised under the immediate supervision of the writer. It was soon discovered that the work of hoeing and thinning consumed the major part of the labor required for the production of the crop, and in 1881 an experiment was made for the purpose of learning whether this work might not be considerably reduced. To this end, the beets were planted upon a deeply plowed clover sod, the land being first thoroughly pulverized, then marked with the ordinary sled marker, making a narrow furrow about one inch deep, and in this furrow the beet seed was dropped by hand, one seed in a place, and six to eight inches apart.

The result of this planting was a comparatively thin stand, and it was cultivated with but one hoeing, and with only such thinning as could be done with the hoe. The quantity of seed saved by this method of planting was nearly or quite sufficient, in this case, to pay the extra cost of the planting, but it would be safer to soak the seed first and plant only such as show signs of germination.

In this experiment the total cost of producing and harvesting the crop was reduced to seventeen dollars per ac.e, with wages at a dollar and a quarter to a dollar and a half per day. This is no doubt a lower cost than can be safely accepted as the average, necessary cost, but the experiment showed conclusively that by some such method the cost might be considerably reduced.

In 1885, Dr. Henry A Weber, the superintendent of the same farm, produced a crop at a cost of about twenty-three dollars per acre, as reported in the annual report of the University for that year.

In 1890 and 1891, this station, occupying the same farm, produced two crops at the following cost, as reported in our Bulletin for February, 1892:

1890.

Preparation of land	$4 00
Seed	1 20
Cultivation	15 40
Harvesting and storing	10 76
Total	$31 36

1891.

Preparation of land	$7 44
Seed	1 20
Cultivation	17 88
Harvesting and storing	12 32
Total	$38 84

The preparation of the seed bed in 1891 required more work, the plants required more cultivation, and the cost of storing was greater, because the beets were pitted instead of being stored in a cellar, as in 1890.

In both these cases the beets were grown on stubble land; the seed was sown thickly with a drill, and as shown, the cost of cultivation which included much hand work was excessive."

With fair allowance for labor it does not appear that an acre of good sugar beets can be grown for much less than twenty-five to twenty-eight dollars.

The yield per acre will depend upon a number of contingencies, but may not be expected much to exceed twelve tons per acre with ten tons as more common and sixteen tons as unusual maximum yield per acre; by this you will understand well grown sugar beets of one pound or two or three pounds in weight, such as would be acceptable for sugar manufacture. The price offered for Ohio sugar beets of fair sugar content and purity is about four dollars per ton. This price may be safely used for our purposes, although it may be exceeded slightly if the grower studies the production of good beets. The usual return per acre will therefore be from thirty-five to fifty dollars. The cost of growing being from twenty-five to thirty dollars per acre, the net return becomes ten to twenty dollars per acre or, at times, more. This will be expected to cover rent of land, fertilizers and other contingencies of beet farming. The profit here stated takes no account of the beet tops, which are returned to the soil. This crop is especially calculated to afford a good home market for all available labor upon Ohio farms where beet growing may be undertaken; for the studious and skillful, it will yield a fair return, in addition, and it promises to diversify our production likewise.

There is an active interest in the establishment of beet sugar factories, especially in the northern section of Ohio. The Lake Erie Beet Sugar Company, of Sandusky, Ohio, has organized to construct a factory at that place. The following quotation from a letter dated December 30, 1897, is self explanatory:

"The Lake Erie Beet Sugar Co., as per above heading, has been organized here and we are now engaged in securing contracts, as per enclosure also herewith, and if we get the necessary acreage contracted, not less than three thousand acres, by February 1, 1898, we will probably have a sugar plant here for the season of '98, and and if not for '98, by '99. We have just commenced making contracts and have something like five hundred acres closed up.

(Signed) Per G. JARECKI, JR."

The contract offered by this company seems fair and equitable. It calls for a five-year guarantee of acreage at a price of four dollars per ton for beets containing sugar in beet 12 per cent.:

Minimum purity coefficient 80 or sugar in beet 13 per cent.
Minimum purity coefficient 78 or sugar in beet 14 per cent.
And any purity.

Twenty-five cents additional per ton is offered for each per cent. of sugar in beet above fourteen per cent., provided purity is not less than eighty per cent. Seed to be furnished at fifteen cents per pound. Agreement is also made to receive all beets before December 15th of each year; one-third prior to October 20th, one-third prior to November 15th and remaining one-third prior to December 15th. For beets below standard given, the price is graded to two dollars and fifty cents per ton for lowest accepted.

This company avails itself of the analyses of the Jarecki Chemical Co., one hundred and twenty-eight in number, averaging fifteen and twenty-nine one-hundredth per cent. of sugar in juice, and purity eighty-three and eighty-eight one-hundredth per cent. with a reported average yield of twenty and seven-tenths tons per acre.

Messrs. M. F. Munson and Geo. P. Sanborn, of Toledo, in behalf of the Toledo Beet Sugar Co., are also offering preliminary three-year guarantee contracts for sugar beets for 1898, 1899, 1900. The prices proposed are based upon the number value method of Stamner. That is the sugar per cent. and purity coefficient are multiplied together and this product divided by one hundred. The integral quotient thus obtained is a number value of which the number ten is a basis. Thus, $\frac{12.75\times78.75}{100}=10.$ Beets of sugar per centage, twelve and seventy-five one-hundredths and a purity of seventy-eight and seventy-five one-hundredths per cent. will command the base rate of three dollars and eighty cents per ton. For each whole or more than half value number below ten, the price is twenty cents per ton less. That is for twelve per cent. sugar and seventy-eight per cent. purity, the number is nine and the price three dollars and sixty cents per ton. Mr. Sanborn reports some one thousand, five hundred acres under preliminary contract and one gathers the impression that a factory is contemplated to work the 1898 crop of beets.

Factories at Chillicothe, Bowling Green and other points have been under discussion, but of them I can present no definite information. The systems of beet purchase, viz. grade price, flat price and Stamner's, would require more time for their discussion than I could use at present. These have been spoken of in Bulletin 90 of the Experiment Station. The interest of both grower and factory must be observed without unnecessary friction. The attendant friction where the graded price system has heretofore been employed in the United States, has been a serious drawback to its use. The contracts offered by the organized companies are both liberal in spirit.

The cost of the beet sugar plant is quite large. There seems little to encourage the erection of factories having much less capacity than three hundred tons of beets per day of twenty-four hours, and the tendency is to still greater capacity. The cost of a factory of the capacity stated would be about one hundred and seventy-five thousand dollars for machinery and other structures excepting buildings. When cost of land and buildings is added the total will scarcely be less than two hundred and fifty thousand dollars. Add to this the requisite working capital and we will perceive that a modern beet sugar factory of a capacity to work three hundred tons of beet per day calls for the investment of four hundred thousand to five hundred thousand dollars, an amount so large as to call for reasonable guarantee of profit before prudent men will invest it. Under present tariff schedules there is a duty of one and ninety-five one-hundreth cents per pound on refined sugar. I am assured that there is additional protection not evident upon casual reading amounting to seven-tenths cents per pound. It is this total tariff of two and sixty-five one-hundredth cents per pound on refined sugar that enables sugar manufacture to be undertaken. There is a marked demand for the development of our beet sugar industry and under these conditions I feel assured that you will unite with me in saying that Ohio, by the conditions offered, is entitled to its full share of the new industry.

At the conclusion of Professor Selby's address, President Bradfute said: Now, gentlemen, we can only devote a few moments to the discussion of this interesting question. In saying what you have to say I will ask you to be as brief and as much to the point as possible.

Mr. S. L. Hill, of Berlin Heights: I would like to ask Professor Selby on what basis of wages he calculates the expense of raising sugar beets, how much per day?

Professor Selby: Those were high wages, one dollar and a quarter to one dollar and a half per day and three dollars per team.

Mr. Hill: On that basis, in raising wheat, corn, or any of the other products of the farm, we would all be in the poor house, everyone of us. You cannot raise wheat and pay anything like that in the shape of wages. We hire a man for fifteen or sixteen dollars a month and expect him at night to do enough chores to pay for his board, therefore, I do not think it is right to figure on the profit of the sugar beet industry by the use of any such scale as that, so far as the general farmer is concerned. Then another thing is the average production to the acre. What farmer did you ever know of making anything figured on an average production of the crop per acre? The average production of wheat in this state is probably eleven or twelve bushels to the acre. It certainly will not run over twelve bushels per acre in the state of Ohio and yet what man could live on that? He could not pay his taxes. The evidence from Nebraska, from New York, and from California, shows from twenty-one to twenty-two dollars per acre outside of the rent of the land. Merchants in the East have built up a factory, have rented the land and hired it all done by the day and the highest was twenty-three dollars per acre, and they estimate, in addition to that, the payment of five dollars per acre for the rent of the land. If we expect to figure on this successfully, we must not base it on such prices as one dollar and a quarter to one dollar and a half per day. You cannot raise any other crop and get anything out of it at one dollar and a half per day. I know I have not been able to do it. Nothing but seed corn ever saved me in these times, and about the only hope of the farmer, as it seems to me, is to live and keep out of debt. I think this sugar beet industry is coming in to save us, with the prospects growing brighter in other lines. I hold in my hand a test of one hundred and twenty-eight samples made by a chemical company of Sandusky; and the average on the one hundred and twenty-eight varieties was a percentage of fifteen and twenty-nine hundredths, gathered from Huron, Erie, Sandusky and Ottawa counties; and the average on fifty-three returns shows that they could get an average per acre or a tonnage of twenty and seven-tenths tons per acre, at four dollars per ton for all beets coming up to the standard of twelve and for all beets under fourteen; and one per cent. or twenty-five cents per ton for every percentage above fourteen. You see that the average was fifteen and a quarter per cent., which would make four dollars and a quarter per ton. If a man raises a beet that does not test more than ten per cent. and seventy-three for purity, they will take it. The farmers have to know the possibilities of this industry or you will not be able to get them into it. There is no use in pursuing the industry unless it will be profitable to the farmers.

Professor Selby: I think the gentleman makes a good point. You will bear in mind that I have made the statement that the cost probably would not be brought much below twenty-five dollars; if brought below twenty-five dollars so much the better. Of course, so far as the average yields are concerned, it is difficult to get at what we can raise off of small plots of ground, especially where the beets are overgrown. The statements I have made were made advisedly. Of course, the farmer who goes to the expense of preparing properly may expect a maximum yield of sixteen tons, or possibly more, per acre; and if he can grow them for less than twenty-five dollars per acre, he will unquestionably have a fair margin. As to the other point, the composition of the beets, of course the danger, as I see it in the beginning of the industry, is to have the matter overstated and I think you will acquit me of being guilty of that; nor do I care to understate it. But these results have been carefully made in beets that were not dried out. Of course, if you top off the sugar beets, and let them lie around and dry out, they will show higher percentages than the averages which we have here given. These were the fresh beets and I feel a deep interest myself because I am charged with doing certain things in this connection in the way of investigation and establishment of this industry and I had hoped to have for distribution today copies of a bulletin giving full results. I was not able to secure them, although I came directly from the public printer's here. We hope soon to have them. They will give the results, and as soon as they are obtainable you may apply for and receive a copy. We hope also to have a sufficient supply of sugar beet seed for Ohio next year. It has already been promised by the U S. Department of Agriculture and I feel sure we will be safe in extending our tests for another year.

Mr. R. L. Holman, Clark county: I would like to ask the Professor, in giving the expense of raising beets per acre, whether he includes all of the work?

Professor Selby: All the work, yes sir. And if nothing is paid out for work then there is that much of a saving.

Mr. Holman: When we take into consideration the raising of a crop of wheat or corn, we do not think anything about that. But these figures of twenty-five to thirty dollars, look enormous to us when we come to think about raising beets. Most of us farmers try to do as much work as we can ourselves. We are compelled to do it, and I believe the man who does look after the minutiæ of the farm, and puts his land in shape, and attends to his crops properly, can make a success of farming, even at the present time. During the past year, I know we have been able to do so without much trouble. In reference to the raising of sugar beets, the gentleman has said that the expense would be about twenty-five dollars per acre. Suppose now we take off the amount of work that we would do ourselves, we would get just as much of the benefit of our labor and more so in that case than we would in raising other crops. Now I have raised the sugar beet more or less. I raised some this year. There was a flood however that came upon us in the latter part of July, which injured the crop very materially. Still my results were very fair. I have never raised less than twenty tons per acre, and have raised as high as thirty-three tons per acre, and in Clark county, where I put out the majority of seed, the average is over twenty tons per acre. I do not think it is a fair test this year. I do not think the farmer gives as much attention to the cultivation of the sugar beet, as he should. It has been so far a mere experiment, you might say. You could tell that by looking at the results. But if the proper culture is given to the beet, and if proper attention is given to the land, and if plenty of room is given to the beet to grow, I think we may expect results such as I have indicated. One mistake of which I think we have been guilty, is an effort on our part to raise too large a beet. Most of the raisers of the sugar beet, I do not think, have understood it. I saw the samples which came, and I said at the time that the beets were too large. One test made by a neighbor of mine, showed purity eighty-six and a percentage of seventeen, but his beets were small, and he said to me, "my man don't give them a half a chance, I am satisfied I could do a great deal better." The raising of a crop of sugar beets is just like the raising of anything else. We have to give it proper attention. We have to give it a proper chance. We have to prepare our soil in time for it. Then, fall plowing is right in line; it is a necessity in the raising of this crop. Our springs are so late that it is a necessity to fall plow. By preparing our soil properly, by procuring the right seed, by giving good attention to the crop, and studying it and working with it as we would with other crops, I think we can secure very satisfactory results, and that will have a great deal to do with the raising of a perfect and typical beet.

President Bradfute: I rather think we have grown too big a crop of corn to allow much discussion upon the sugar beet industry this afternoon. We will have to close the discussion of this subject and pass to the next topic.

I think the Ohio Horticultural Association is indeed fortunate to have so practical and active a man as its present secretary, Mr. W. W. Farnsworth, of Waterville, O., whom I now have the pleasure of introducing to you, and who will address you on the subject of "Ohio Horticulture."

Mr. W. W. Farnsworth, Secretary of the Ohio State Horticultural Society, then read the following address to the Institute on the subject of

OHIO HORTICULTURE.

By W. W. **Farnsworth**, Secretary of The Ohio State Horticultural Society,
Waterville, Ohio.

The civilization of any country is quite accurately measured by the progress which that country has made in the adorning and refining art of horticulture.

Horticulture, in its more practical departments, is the intensive rather than the extensive branch of rural occupation, and as such naturally adapts itself to the conditions of denser population which inevitably result as the country develops its resources in the products of the soil, the mine, the factory, and the forge. In its ornamental and æsthetic branches it naturally accompanies an increase of wealth and opportunity and a desire for beautiful homes.

Agriculture and horticulture may well be likened to husband and wife. The husband and agriculture clear away the forests and build houses and till the fields and produce that which is strictly indispensable to existence, while the wife and horticulture transform the log cabin, the more pretentious abode and the mansion from *houses* to *homes*. As no house, however costly, elaborate or well appointed can be a home in the fullest, highest sense of the word, without the wife and mother as home maker, neither can agriculture alone produce homes fit for the abode of that highest type of civilized manhood and womanhood, the educated American farmer and his wife, without the aid of its sister profession, horticulture, to finish and perfect the structure so well begun by agriculture. The thoughtful student of moral economics is beginning to realize more fully than ever before the value of horticulture aside from its commercial value.

He has found that an abundant use of fruits and vegetables tends to health of mind and body, and this means an increased capacity for, and enjoyment of labor, both mental and physical. He has observed the value of object lessons as an educational force, and realizes that flowers and lawns, trees and shrubs impress lessons of refinement and culture upon the minds of all, and especially upon the young who are just forming their character. Surrounding them with these attractive and interesting objects of nature, also allures them to study nature's methods, and master her secrets. It adds much to the happiness of all, and happiness obtained by such commendable methods is the end and aim of human desires.

We are sometimes inclined to imagine that horticulture applies only to the products of the commercial fruit grower. His output represents a very small portion to the horticultural productions of the country. It has been shown that the egg product of Ohio is greater in value than is the wheat crop. This may serve to impress upon our minds the fact that it is those items of general and constant use and enjoyment which constitute an aggregate of greater value than larger items, not nearly so often repeated. A farmer threshes his wheat crop but once a year, while his palate is pleased, and his body nourished and sustained by fruits and vegetables, and his vision refreshed and delighted by trees, shrubs and flowers continuously for three hundred and sixty-five days in the year. Add to this the great amount of horticultural products consumed either by the stomach or the eye, by every inhabitant of our cities and villages. and we begin to realize the magnitude of this industry. Unfortunately our statistics give us but little light upon the subject. I have here a clipping from the St. Louis *Globe—Democrat*, bearing upon this subject which, with your permission, I will read.

"At the recent meeting of the State Horticultural society at Moberly the secretary announced that carefully prepared figures showed that the apple crop of Missouri this year amounted to twelve million dollars, the peach crop to three million five hundred dollars and other fruits to four million dollars, giving a total fruit production in the state in 1897 of nineteen million five hundred thousand dollars. This is a splendid and a surprising addition to the income of our people. The orchards and fruit gardens of Missouri have risen to their present importance so quietly that not much is known about them. Of course every person in Missouri is aware of the abundance of fine fruit in the local markets, but few have grasped the aggregate value of the fruit crop or its future possibilities. The business is in its infancy, and in the larger sense only crudely understood. But the time is at hand to devote more systematic attention to the subject and to keep in mind the fact that the fruit of Missouri is destined to yield an enormous revenue to those who intelligently till the soil."

This shows the value of only a small portion of the horticultural products of Missouri, and I believe those of Ohio are considerably greater. We must also consider the private and commercial green houses, the parks and cemeteries, the fruit and vegetable gardens, and home adornments of every farmer and villager before we can obtain a full conception of the magnitude of Ohio's horticultural interests.

One of the prominent factors of Ohio's greatness, is the happy combination of soil, climate and locality, which enables her to bring to perfection such a rich variety of products. The fruits of field and flock, orchard, herd, garden and vineyard all find some congenial spot within our borders, and all find a ready market in supplying the needs of that part of our population whose time and energy is devoted to developing the other class of Ohio's products which emanate from loom, workshop, factory and furnace.

The advantage of a diversity of products, and of keeping them all in a flourishing condition, is acknowledged by all.

The interest now being shown in developing the sugar beet industry is proof of the first part of this proposition, while the second is proven by the fact that wherever one industry is driven out of our state the entire commonwealth is the loser thereby. When the sheep were driven from Ohio's hills by reasons which we will not undertake to discuss, and when the dairy interest was injured by having lost its profits through competition by counterfeits, not only shepherds and dairymen suffered, but the entire state felt the loss. We should, then, unite as citizens of one great commonwealth, whose interests, while seemingly diversified, are yet so closely interwoven that one cannot fail without injuring each of the others, while the success of any branch of our industries adds to the general and individual wealth, prosperity and happiness of each and every one.

Horticulture, which has contributed so much to the comfort, health, pleasure and profit of Ohio's citizens in the past, and which by proper care may greatly increase those contributions in the future, is threatened by a serious foe, which bids fair, unless checked by prompt and decisive measures, to sap its very life blood; I refer to the Pernicious or San José scale, an enemy so minute in form and so insiduous and persistent in its operations as to strike terror to the heart, not only of those whose livelihood is gained by horticultural pursuits, but to every consumer of fruits, or every lover of trees and shrubs. We ask your coöperation in securing the necessary legislation to enable us to hold in check this dread destroyer. It has already secured a foothold in twenty-two counties in our state, as far as known, and it is probably present in others. Owing to the vigilance of Professor Webster and the State Experiment Station it is perhaps not spreading as rapidly as in some other states. At Sparta, Illinois, a bad case of scale was found a year ago extending as they supposed over but a small territory, this year they find it has spread over an area of twenty-five square miles, and probably into the timber.

The state appropriated three thousand dollars to fight it.

Our State Horticultural Society early recognized the gravity of the situation; and after carefully considering the question, authorized the secretary at its annual meeting in December, 1895, to communicate with other state societies, with a view to securing national legislation and uniform state legislation on this subject. In accordance with the responses received, our society called a national convention at Washington last March, wherein were represented the fruit interests of the United States, and, after careful consideration, a bill was drafted which was afterward submitted to the Nurserymen's Association at St. Louis; after a few modifications, it was endorsed by them and will be put upon its passage soon. In addition to this we *need* and *must have* a state law. Our Society has appointed a committee to prepare such a measure as will best insure the safety of this interest in Ohio, and we earnestly urge your cordial coöperation in securing the passage and enforcement of this measure of self protection.

Our profession is fortunate in that it is not possible for large syndicates or corporations to control and monopolize our products by the use of combinations of machinery and capital, patent or copyright, nor even, to any great extent, dictate as to selling prices, nor to injure our market by offering in competition a bogus article. Our efforts are mostly directed to putting upon the market what has been called a finished product in original packages. This has a tendency to encourage the small land owner, for he feels that in this he can compete on equal terms with his wealthier brother, and whatever tends to build up a nation where everyone owns his home, strengthens that nation, but it is from insect and fungous enemies that we fear the most.

We ask you then for your coöperation in warding off this danger, that horticulture may share in the general prosperity which seems to be dawning, that we may, as a nation of diverse yet mutual interests, be prospered individually and collectively.

At the conclusion of Mr. Farnsworth's address, President Bradfute said:

The question is now open for general discussion and we would be glad to hear from any on this subject.

Hon. N. B. Ross, Representative from Putnam county: I would like to hear the subject referred to by Mr. Farnsworth, wherein he speaks of contemplated legislature this winter, fully discussed, so that we may all be able to act intelligently upon it. I must confess I am quite interested in the matter and I hope I may be able to gain such information from your discussion this afternoon as will be of assistance to me this winter.

Mr. Geo. E. Scott, of Mt. Pleasant: I want to ask Mr. Farnsworth if it will be possible—as I want to plant an orchard in the spring—to secure trees from the nursery and to know that they are free from this black scale? Also, if these trees have been properly sprayed, whether it will be a protection against this disease?

Mr. Farnsworth: This work is only in its infancy in this state. If Professor Webster is in the audience, I would be glad to have him speak upon the subject, because he is better qualified to inform you than I am. Many of the nurseries throughout the state have been inspected by the state entomologists and those nurseries have been given certificates of freedom from the scale. While that may not imply positively that the trees obtained from such nurseries are free from the scale it does go to show that no scale has been found in those nurseries by a careful examination, and if you will in planting those trees examine carefully to ascertain if there are any signs of the presence of the scale then I think there is not so much danger of encountering it. There is not so much danger to the man who has had his attention called to it or the man who is watching for it as there is to those who overlook the subject entirely. Perhaps there are no horticulturists here who are fully alive to the magnitude of the subject. We are not in so much danger of receiving this scale directly from the nurseries, because their attention has been called to it and they are on the lookout; their neighbors, however, may receive it without their knowledge and by careless treatment it may be allowed to spread. Although you may be on the lookout and watchful yourself, yet your neighbor may be more careless than you, and if the scale gets a foothold in his orchards it may spread by means of birds and in other ways from his orchard to yours, and before you are aware of it, it has developed to such an extent that it may mean the destruction of the orchard. If Professor Webster is here, he can give you much more information in regard to the matter and in reference to the subject of inspection than I am able to do.

Mr. Scott: I would like to know how I can keep it out of my orchard now? Is there any means by which I can keep this disease out of my orchard by spraying or by an emulsion of any kind used upon it?

Mr. Farnsworth: It is hardly practical to attempt to keep it out by means of spraying. In this, as in almost every disease, prevention should be the remedy and it is emphatically so in this case. If you plant trees free from it and there is no scale in the immediate neighborhood there will be little danger. It is not like a fungous disease but it can be carried. You may use all possible means of protection for your own orchard, but your neighbor, even a half mile from you, may have it and it may be communicated from that source to your orchard. We have no law or power or authority to compel him to destroy that infected orchard, and it may become a veritable hothouse for the propagation of this scale which will spread and destroy your orchard in spite of all you can do. You may destroy it this year and the birds flying from his orchard to yours will carry the scale next year, so you will see that individual effort alone will not suffice. But all must use every means of precaution for the prevention of this disease. You should not be allowed to have an orchard which would be a breedinghouse for this scale any more than you should be allowed to have a pesthouse for the propagation and spread of smallpox.

Mr. R. L. Holman: Havn't we got a law now authorizing the appointment of persons for the purpose of examining to see that it is killed out and destroyed?

Mr. Farnsworth: We have what is known as the Black Knot and the Yellows Law, but it does not cover the San José Scale. These laws are not broad enough to prevent the spread of this disease. I understand that Mr. Owen is in the room. He has had a great deal more experience with the San José Scale than any one else here. I am happy to say that I have had no experience with it in my own neighborhood. I know the habits and appearance of it but fortunately we have not been troubled with it. I understand Mr. Owen, who has been familiar with it and who has met these problems face to face, is here. I also understand that Professor Webster is here. They are better qualified to give you information in regard to the working of this law than I am because they have met these very problems, which we now seek to obviate.

Mr. Holman: Isn't it a fact that if it once gets a start in a nursery that it is almost impossible to get that nursery thoroughly clear from it?

Mr. Farnsworth: It is very difficult and next to impossible.

Mr. Holman: I had some little experience with it in the case of house plants, and I never saw anything so hard to get rid of. The best thing we ever could use was tobacco. Then we used coal oil. In this way we removed it three or four times from a very valuable plant, which we thought a great deal of and which was kept right in the house, but it would not be more than a couple of weeks before it would appear again somewhere. I finally told my wife to take it and put it in the fire. I took some of it and put it under the microscope and you could not find a place but you would find a dozen or fifteen little scales just coming out. I believe it is almost impossible, where it gets a foothold in a nursery, to eradicate it so the trees will be entirely free from it.

A member: I would like to ask what varieties of trees it attacks?

Mr. Farnsworth: Everything but "singletrees," I guess. The early Richmond cherry tree has been comparatively exempt from it so far, but I am not aware that any other variety of fruit trees is exempt from it. Even the Osage orange hedge has been attacked by it. It was thought to be carried largely by insects which collected in the Osage orange hedges.

Mr. Longenecker: It is quite likely that this scale has secured such a foothold already in the state that we will not be able to eradicate it. It is quite likely that it will become an individual fight with each man who has fruit upon his place. It is not one-tenth the trouble to eradicate the black knot from plum trees or other trees that it is to get this scale out of the nurseries and orchards. I am sorry to say that it is probably in more nurseries than have already been published. It may be in many localities now that we know nothing of. It had become prevalent, to some extent, before we discovered its presence. When the scales become so numerous that the attention of the grower is attracted to the disease, and he waits to communicate with the Experiment Station, it has become almost too late to do anything to eradicate it. Now, under the laws we have, persons are prevented from permitting trees to grow which are affected by black knot and several other diseases. Yet, as that law is, who can be appointed in our county or in any other county of the state to see to it that the law is enforced? You all know how the lines are drawn in our various townships, and it would be some friends of the trustees or some friends of the party interested who would be appointed, if any such attempt was made, and those persons would hardly be able to tell black knot from any other kind of a knot. You could not take black knot and show it to them and get them to recognize it the next day if they saw it. They would swear to you it was caused by some insect laying its eggs there after they did see it. Such has been the case in some counties where they have tried to operate under this law. Would it not be well to have an examination and instruct the people upon this subject? It could be announced where these examinations were to be held and in this way a corps of men in the state could be educated who would be able to cope with this trouble. Many men want the emoluments of office but care not whether they accomplish the work that is needed. We might take an ordinary observer and put a small tree, three or four feet high, in his hand, and tell him that there were a half dozen scales on it, and yet he would not be able to find them, although you gave him all day to look for them. So you see how hopeless our fight is under present conditions. Birds can carry it for miles. If it is in twenty-two counties in the state it will soon be in many more counties. I saw a report from some one in Tennessee where a man has been spraying heavily with whitewash and that has destroyed the scale, or will destroy it. I do not know whether that is true. It would seem that that would scarcely do if we cannot accomplish its destruction by the use of coal oil without injury to the tree. I do not know whether any of the other gentlemen present have heard of this report or not, but let us make an experiment of that kind if the opportunity offers. It is profitable for us to spray with the Bordeaux mixture early in the spring, especially before the blooming season. If we have black knot in the neighborhood we spray even as early as March. Now, with this Bordeaux mixture, fortunately we can use, if we so desire, an excessive amount of lime above that given in the formula for the destruction of black knot. We can try it upon our trees before the foliage comes on, making the mixture almost of the consistency of common whitewash, and see whether it will have any effect. Have you seen this report, Mr. Farnsworth?

Mr. Farnsworth: I have seen quite a number of these remedies.

Mr. Hill: I would like to ask Mr. Farnsworth a question or two in regard to the plum. It is quite an industry in our county; there are a great many acres of them. Some advocate spraying to prevent the curculio, but it does not seem to be, in some cases at least, effectual. Now, in your opinion, is it better to do that or to jar the tree as used to be the custom? Some advocate jarring the tree without having any canvass under it, and claim that the curculio will never get back if they are jarred once to the ground. I have a nice young orchard and I would like to preserve it from the ravages of this disease and from the ravages of the curculio. It is not much of a job to jar the trees if that is sufficient, but if you have to catch the curculios and destroy them it is a good deal more of a job. One orchard in our neighborhood was sprayed. They had a fine crop of plums from it; also had apricots in the same orchard, but they grew a little unevenly and there was no rain after the Bordeaux mixture and the lime mixture were put upon them; it stuck to the fruit and the consequence was that they had to be washed before they could be put on the market.

Mr. Farnsworth: I will agree to save his plum crop if he will tell me how to get rid of the scale? I may say that we jar our trees for the curculio.

Mr. E. S. Tussing, of Franklin county: I would like to have some of these gentlemen explain to us the appearance of this San José Scale. I had some blackberries that were infected the past year to quite an extent with some kind of a scale. So far, I have seen no serious results from it. I do not think it is the San José Scale, although I would like to ascertain that fact to a certainty. I have had some of them examined by an entomologist who told me it was a scale of some kind, but he gave me no definite idea of what it was. Many of us have never seen the San José scale. The scale I speak of, on my blackberries, was close to the ground, most of it. Some of the canes were white for the distance of twelve to eighteen inches, they were almost white from the ground up that high, and some as high as two feet and yet I saw no serious results from it. I would ask for a description of this scale so that we may be certain when we see it.

Mr. Farnsworth: I would like to ask if Professor Webster and Mr. Owen are in the room. If Professor Webster will come forward, I am sure that he can enlighten us on this subject better than I can.

Professor Webster: I would like to ask the chairman what the subject is before the Institute?

President Bradfute: There have been some inquiries made as to the nature and character of the San José Scale and it has been suggested that you can give us some information on the subject.

Professor Webster: I do not know that I can give much more than Mr. Farnsworth has already given you, without taking up more of your time than we can spend. As he has told you, it is scattered over twenty-two counties of the state. Not only have we got it in that number of counties, but there are some cities—one city that I have in mind, at least—in this state where the private lawns, etc., are getting in pretty bad shape, almost as bad shape as the orchards. It is getting to be prevalent not only in the farmers' orchards, but in the city lawns, in the private grounds, parks and cemeteries.

Now as to the extermination of this scale; I believe it can be exterminated if you begin at once, but if you wait a few years longer, you will never exterminate it in the world. I have been watching it for two years. As fast as we get track of these various outbreaks, we try to keep as close watch as we can, with the time and funds at our disposal, but you will understand perfectly well that two men can not be everywhere at the same time, and can not be in every place in the state of Ohio. Now we are watching as carefully as we can the various localities where it has been located and that is about all we can do. We have not the least bit of power in the world. All we can do is to urge people to cut out the worst trees and treat the others. They can do just as they please about taking that advice. I have no more authority than you have in the matter. If a man does not want me on his premises all he has to do is to tell me to go and I have to do just as you would under the same circumstances. Fortunately we have been able to cope very successfully with the most of these infected orchards. There are some outbreaks, though, that unless they are cared for very quickly, are going to spread and spread widely too. Now I do not know to what extent we have learned of all the outbreaks over the state. But I believe—I am trying to think anyway—that we have located the worse ones. Now if we can stamp out some of them—and at least three-fourths of them could be stamped out if a person had the requisite authority—then it will not be so difficult a matter to manage the rest. As you have been told, it can be carried for a mile or half a mile by birds; not only that, but we are beginning to find out that the ants cut a great deal more of a figure than we have ever dreamed of in the circulation of this disease, running up one tree in the summer time, getting little particles of this scale and then running up other trees, thus spreading the disease. Now they don't go to any very great distance, but they will spread the disease throughout the orchard in a way that we have not been able to comprehend until this past season. I have said so much about this, throughout the state, that it has gotten to be a sort of a bugbear to talk about. But it is very difficult to distinguish and very difficult to see. This scale which the gentleman described upon the blackberry plant is a different thing entirely. It is not a very easy matter to detect it. For instance, in going into a locality we have to simply go around the borders and then we have to estimate that within that area there is nothing safe. That is the only way to do. You can not go over every square inch of surface, of every tree in the nursery; it is out of the question. We have inspected forty-nine nurseries in the state of Ohio, but of course we could not go over every tree. It would be absolutely impossible. Some of these nurseries we have been over twice; some of them three times, and where we have been over the second and third time, I am very sure that those nurseries are free from this trouble. Where we have been over them once, there is a possibility that we may have overlooked it, but you will readily understand as we go over them again and again, it is not going to get very much of a start until we find it, and after we go over them three or four or five times and find nothing, it would be safe to say that there is nothing wrong in them. Now, nurseries in Ohio are not anywhere nearly as bad as in other states around us. There will be no danger after the next six months, I hope, if we can get our bill before congress next week, in Washington, as we now hope to do. Within six months there will be practically little danger from a nursery if this contemplated legislation becomes a law, because if a nurseryman cannot show that his nursery has been carefully inspected, every transportation company in the United States will refuse to accept his stock and he can not ship anything. The San José Scale is a very difficult thing to describe, yet if you once see a tree badly affected with it you will never forget it. It is very minute. You perhaps first notice a reddish color in the bark of the tree; it then spreads rapidly. The rapidity with which it spreads is absolutely incomprehensible. I can not begin to compute the progeny from a single one, if left free, during the whole year. There is no doubt but what we have to fight the worst thing we have ever had. Every year we have to deal with it proves that fact, and unless something can be done, and be done quickly, I cannot tell what the result will be. I do not know. It simply comes to this-that no fruit grower will be able to raise any fruit unless he puts a great deal more expense on it than he probably gets for his crop now. If you can double or treble or multiply by four the amount we have to pay for the fruit and let the fruit grower take that much difference and treat his trees every year, then we may be able to raise fruit. We have several places here in Ohio where practically nothing whatever is being done to prevent the spread of the San José Scale. When a tree is found infected with it, it is cut out and burned. Yet the tree would have died anyway, inside of three months, yet that is all that is being done. I think Mr. Farnsworth has given you an idea of what is needed, and Mr. Owen has had some practical experience that is of a different sort from mine. Of course I have been over a great deal more area than he has; I have seen more outbreaks and perhaps know more about the scale and about its habits, but he has had a good deal of very recent experience and he can give you a good deal more information, in some respects, than I can.

A Member: Can you tell us the appearance of the insect to the naked eye? Also, how to detect it?

Mr. Ross, of Putnam County: I would like to inquire of Professor Webster what remedy he has to suggest and what legislation would be necessary to meet the case?

Professor Webster: I will answer the one question before I do the other; and that is how to detect it. That is a pretty hard question to answer. We entomologists have felt cold chills running down our backs, once in a while, for fear we would make a mistake. It is not a very easy matter to determine the difference between that and some others that we have. When it comes to a pinch, I will not risk such an examination as I am able to make in an orchard or in a nursery. It is not a great while before they begin to cluster together and form a gray scum. They are round with a pit in the top. We have some others of the same description, so you see I cannot describe it to you in this way so that you will be able to determine for yourself the difference between that and some others.

A Member: How large are they?

Professor Webster: A full grown one is perhaps about one-third larger than a fly speck. Now as to the remedy. If trees have been very badly attacked the cheapest way is simply to burn them, because they seem to poison the inner bark where they are thick. If you cut into the inner bark it looks as if it had been dying. They seem to poison the bark of the tree. The bark will not grow. There will be dents all over it where they have been clustered together, and if the tree is very badly affected it will be a great deal cheaper to burn it and put out another tree than to attempt to save that one. If they are not badly affected we can destroy them by the use of whale oil. You cannot do it in one year, perhaps cannot do it in five years, unless you are very careful. But if it is followed up carefully, year after year, it can be done.

One of the gentlemen has asked as to what legislation we deem necessary to prevent this disease. I would say in response to that, that there is a committee appointed to discuss that matter and to settle upon what is needed. I am only an individual and I have no right to forestall any instructions or recommendations that committee may make. I expect they will get together tonight or tomorrow morning and will then let it be known distinctly what is probably necessary.

A Member: What is the color of this insect?

Professor Webster: A sort of an ash gray.

Dr. W. I. Chamberlain: It seems to me what we need worst of all is some means of identification at our own homes. If we had a twig brought in here, with a small hand glass, and were permitted to examine it for ourselves with the hand glass, it seems to me that any man in this audience could come to a conclusion with reasonable certainty, at his own home, as to whether his trees had or had not the San José Scale, at least he could become convinced enough so that he would cut off a sample and mail it immediately to the Experiment Station, and in this way ascertain the fact. We would like to know something about it, so that we can identify it ourselves; get acquainted with it, so that we will know it when we meet it in our own homes.

Then another thing; what this gentleman wants, and what my friend from the legislature wants, is a specific statement of the legislation that is required upon this subject. As I understand, the committee is going to present that information. I see several members of the legislature present, and about all we can say to them is that when that committee from the State Horticultural Society reports a bill—then let the members of the general assembly get together and pass it (applause). Our people of the Horticultural Society have no axe to grind whatsoever in the matter. Probably the bill in Ohio will be essentially the same as the one in Washington, eliminating its interstate feature, of course. If we knew what the essential features of the bill were, we could talk it up and work it up in the different papers we are connected with. It seems to me, if this is so serious a thing as it seems to be, that every man in this audience ought to be able to identify it and tell his neighbours how to identify it, and then we ought to have a law, giving authority to stamp it out of existence. If Mr. Farnsworth can give us any more definite and specific information as to the legislation required, I am sure we would be glad to hear it; and if Mr. Owen can tell us, as ordinary sinners, how we can destroy this pest in our own orchards and among our own shrubbery, we would be very glad indeed for him to do so.

Mr. Farnsworth: I can add but very little to what Dr. Chamberlain has said except merely to say that we have a committee of six, appointed by our State Society, who will meet in this city tonight and discuss this very matter and try if possible to evolve some method that will be practical in stamping out, or at least holding in check, this San José Scale. I realize the advantage, which he suggests, of having this bill prepared and discussed by this meeting. It is possible we may be able to make a report before the institute closes, but it is a matter which will require considerable deliberation. It is a deep problem. We do not wish to act hastily in the matter and we may not be able to crystalize the plan which we desire to have put in effect before this institute adjourns, but we do trust that you will act as Dr. Chamberlain has suggested, and give us your influence in obtaining the passage of this measure. I assure you that you all have an individual interest in this matter, not only as producers of fruit, but every one of you who loves flowers, lawns, shrubbery, etc.

Mr. W. H. Owen, of Catawba Island: I can only relate the experience we have had in the treatment of this disease. We are a little bit prone to advertise this matter from our own locality, but I guess it is all right at a meeting of this nature. The difficulties we have to contend with in the treatment of the San José Scale are very severe. Last season, after discovering it, it was determined to make a thorough examination. We examined as thoroughly as we could throughout the territory and then issued orders as quickly as possible, got all the people interested and ordered them to spray within that infested district. They all complied with the order very graciously. This season the situation is different. Some of the people have learned by this time that they did not have to spray only those trees upon which we have absolutely located the scale. Now any one that has had any experience with the San José Scale knows how difficult and how absolutely impossible it is to locate the scale on every tree. Professor Webster will agree with me, I think, in that statement. The minuteness of it is one of the difficulties to be encountered. We frequently find only a few isolated specimens on a single tree. After going over a tree, branch by branch, you cannot say positively that there is no scale on it. Some of these people within this district say that they will not spray unless we can find the scale on their trees. Others are willing to spray without regard to that. There is one essential feature that should be embodied in this new law, and that is to oblige them to spray all the surrounding and intermediate territory. That is highly essential. We are not waiting for the legislature, in our locality, because the pest has gotten almost beyond bounds and the commissioners, of whom I happen to be one, applied to the trustees to empower them to hire the necessary help in locating it so that we can treat it under the present law as fully as possible. They were going to restrict us at first to five or six helpers and we asked them to leave that matter open and to allow us to secure as much help as we thought was necessary. We are initiating good eyesight into service as rapidly as possible and at present we have sixteen people who are well versed and posted on the San José Scale locating it on the trees throughout the territory. If we can not get proper legislation brought to bear upon this subject before spring, all we can accomplish then is to spray these trees upon which we do absolutely find the scale. We are going over the territory as rapidly as possible. Last year the area covered was probably two hundred acres. This year we find it fully one-third larger than it was last year and the most of it was developed during this last season. We find isolated cases. This last season we have found a few isolated cases a quarter of a mile from the infected district. We do not doubt but what it is in other parts of the island but it has not been found yet. One of the main features is the treatment of it. I would suggest to those people that have the scale not to experiment too much on it. Do not use that lime solution, especially, that has just been suggested. It takes something stronger than lime to kill the San José Scale. The most effectual remedy is the one that we tried last year and is kerosene, pure, unadulterated kerosene. Unfortunately, however, it killed every tree in the territory that was treated with it, but it is a sure remedy for destroying the San José Scale.

As to the treatment with whale oil soap, we of course have found it as manufactured by different factories with variations in quality; but we found one soap that was made under the supervision or instruction of Dr. Howard, and that was the soap we employed in our work. It is made into a soft soap by the use of pure potash—caustic potash—and fish oil. The whale oil of course gives it a little better sounding name than to use the expression common fish oil soap; nevertheless that is all it is. It is common fish oil and potash and we used two pounds to the gallon. Now in treating this territory we used last season twelve tons of this whale oil soap. To treat the territory again as it ought to be treated, that is with two treatments, which is really essential, it would probably require thirty to forty tons of whale oil soap to go over it and to go over it effectually. The treatment should not rest with the individual orchardists, as we find that some are very careful and do their work thorougly and in that territory we find very little scale even with the one treatment we gave it last year, but, unfortunately, there are many who are not so careful in their treatment, and we find in some of those orchards more scale by twenty per cent. than there was last year, so you see the advisability and necessity of leaving the work in the hands of a commission.

Mr. John L. Shawver, Logan county: I would like to ask one question in regard to forest trees. If it gets located in forest timber how would you eradicate it? They are so situated that you cannot spray them. Is there not danger of the San José Scale spreading from the orchards to the forest trees, or from the forest trees to the orchards? How are we to locate it?

Mr. W. H. Owen: I would state to anybody having a little black scale or a little gray scale, don't trust to your own decision in the matter, but send it to your state entomologists at once for diagnosis. That is the only way to satisfy yourself. There are so many other scales that are so similar to the San José Scale that it is hard to determine the one from the other without examination by an entomologist. Take the immature scales, especially those which we find in the outskirts or in a newly started colony, and they are almost jet black, especially the male; but as they grow more mature and as they develop in that colony, especially the female, they are larger and more of a grayish or brownish appearance and if you put them under a strong lens they vary but little in construction. The female is perfectly round. Under an ordinary lens they are rather corrugated in appearance with a depression in the center and with a pronounced nipple in the center of that depression so that it is conical in shape and has a regular volcano effect; but there are other scales so closely allied to it, especially the scale obscure, which is the most closely allied to it, and the Putnam scale, that it is very difficult to those unfamiliar with the varieties to tell one from the other. Of course in the case of the Putnam scale there is not such a close resemblance or similarity only in the badly infected points when it becomes encrusted and forms that gray appearance which they both take on after the tree has become thoroughly encrusted.

Dr. Chamberlain: How do you ascertain its appearance? Can it be ascertained by the naked eye or only by the use of a glass?

Mr. Owen: It is impracticable to look over a tree with a glass. It can be detected by the use of good eyesight if you look over your trees carefully. Where you find it, you will find it from the tip end of the tree to the root. We have found it an inch and a half under the surface of the ground so that you may find it at any place on the tree. In our territory, where it has been located for some time, we are more liable to find it on the older growth of trees and it only gets on the newer growth when it has become very thick and has been located for some time.

Now this year we found it more on the second year's growth.

Dr. Chamberlain: How would an opera glass do for its detection?

Mr. Owen: If we could only have a lens that we could put on the eye and look at the whole tree we would be better able to detect it, but unfortunately we cannot do this. Some gentleman asked in regard to forest trees. I would say that the chances are that it will get on your fruit trees first and from there spread to the forest trees. I do not think there is any great likelihood of its manifesting itself in the forest trees before it attacks the fruit trees. There is no imminent danger from that at the present time, from the fact that most of our forest trees are oak and hickory and on those trees we hardly think it will exist. There are some forest trees that it does propagate on but not very rapidly and I think it would finally die out if confined to forest trees alone. On the basswood and the walnut and such trees as that it will propagate to some extent, but I do not think there is anything to be feared from your forest trees getting it. It will get into your fruit trees first and from there spread to the forest trees if it attacks the forest trees at all.

Mr. Dowler, of Preble county: We had an outbreak in Preble county and the only thing we did was to cut the trees and burn them. We found it a very safe plan not to buy any trees for the time being and I think we shall follow that up for a year or two with the hope that we will be able to stamp out the outbreak at the very start. I was so afraid of it that I did not even go to see it. I would like to ask the gentlemen if it has any natural enemies?

President Bradfute: I think Professor Webster could give us some information on that subject.

Professor Webster: Of course it has natural enemies. We know that all these scales have, but they are insufficient to keep it in check. Possibly nature will remedy it in time but we do not want to wait upon nature so long because our orchards will be gone before nature would come to our rescue. We know that the lady beetles feed upon it, but to what extent we are not able to state.

A Member: I would like to know where to secure this whale oil soap which Mr. Owen spoke of? I wish you would give us the address of some of the manufacturers of that soap.

Mr. Owen: We have been getting our soap from James Good, of Philadelphia, Pa., but I would state that we are about to start a soap plant of our own at Catawba Island, where we can furnish you all that you may want.

Mr. L. P. Bailey, of Tacoma: Mr. H. P. Miller is the chairman of the committee on resolutions and has requested me to ask all members, having resolutions to offer, to hand them to some member of the committee before adjournment.

President Bradfute: I have allowed this session to be prolonged far beyond the regular time for adjournment, but this question was of such great importance that I have allowed the discussion to continue. In fact, it seems that the very lives of the orchards of Ohio and of many of our ornamental trees are at the mercy of this little insect. I thought it wise, therefore, since you were all interested, to allow the discussion to proceed. But it is time now that we should adjourn.

On motion, duly seconded, the Institute then adjourned until Wednesday, January 12, 1898, at 10 o'clock A. M.

MORNING SESSION.

WEDNESDAY, January 12, 1898.

The State Farmers' Institute met pursuant to adjournment at 10 o clock A. M.

President O. E. Bradfute, after calling the Convention to order, said:

Before beginning the regular work of the morning, Mr. Wells W. Miller, Secretary of the State Board of Agriculture, has some announcements which he wishes to make.

Hon. Wells W. Miller, Secretary of the State Board of Agriculture:

Mr. President and Gentlemen, you are all aware that the State Board of Agriculture is engaged in the very important work of crop statistics. We have attempted to secure crop correspondents in every township of the state. Some of our lists are not complete. Our reports are almost absolutely correct and have been verified time after time and year after year, although they have been attacked by the stock speculators and the grain dealers. But after the reports have been issued, and the final results have been gathered, it has been discovered that our anticipations have been realized fairly well and our statistics have proven themselves to be substantially correct. We haven't a full list of crop correspondents throughout the state. Men drop out, being removed by death or removal from the neighborhood or disinclination or other engagements which makes it impossible for them to continue longer in coöperation with the Department of Agriculture. We have a grand corps of men all over the state; they make excellent reports, conscientious reports. Some report too high; some report too low; some report just about right, but the average is always about right as you that have given very close attention to the subject have observed. I have here lists of the crop reports from the different counties of the state and as there is not a full attendance this morning I do not believe that this is the best time to present the matter to the Institute. I will leave these reports here, with the permission of the President and in his charge. Mr. President, I would like to have a time fixed when the matter may be called up and more fully presented. In these lists you will find an alphabetical list of counties the first being Adams County. You will find a list of the townships in which we have correspondents and the names of the correspondents. I hope there are representative farmers from each county present who can suggest some good names of persons to act as crop correspondents in the townships where we now have no regular correspondents. To persons thus furnishing their services to us we will be very glad to send supplies and coöperate in every way within the power of the State Board of Agriculture.

If an opportune time occurs this morning, and if the plan suggested meets with your approval, we would be obliged to you if you would call attention to it and have the blanks filled in with the names of good and competent correspondents. The Department of Agriculture will be very greatly obliged to you, and when I say the Department of Agriculture that means all of the agriculturists of the state of Ohio. This is in the interest of the agriculture of the state. It has been charged that it is in the interest of the dealers, but I assure you that the dealers are as anxious to suppress our reports as we are anxious to get them out.

Gentlemen, there is to be this afternoon a dedication of Townshend Hall at the Ohio State University. The Board of Trustees is desirous of having the representative farmers who are in attendance at this annual State Institute favor the Board, the faculty and the management with their presence this afternoon at the dedication services and also as a luncheon to be given at six o'clock this evening. To the end that you may be admitted and that the great public, which cannot be admitted, may be identified they have issued tickets of invitation and have requested me to distribute them among you. I have stamped on them "The Compliments of the State Board of Agriculture," with my signature as Secretary, and I would like to present to each one of the members of this Institute, who may wish to attend, one of those tickets, which are not transferable. It is a matter of honor. Insert your own name in the proper blank and use it yourself. I hope you will all be present at the banquet or luncheon, as they have termed it, this evening. It will be more or less elaborate, but I do not know how much so.

In order to distribute these tickets now, I will ask some of these gentlemen sitting in the front to pass up and down each of the aisles and to hand to each of the members present a ticket. All those who have been already supplied will understand that they are entitled to but one ticket each. I will say while the gentlemen are distributing these tickets throughout the house that those who may come in later may be supplied with tickets by applying to the ushers at the door.

A Member: I would like to ask a question. I don't know that I am a member of the State Farmers' Institute, but I am crop correspondent from Lake County.

Mr. Miller: You are a farmer?

The Member from Lake County: Yes, sir.

Mr. Miller: Then you are a member of this Institute. Every farmer in Ohio is a member of this Institute. While the distribution of these tickets is going on I want to occupy your time briefly by a little explanation. I am very glad the gentleman has asked that question. I have had it suggested to me that there was some very intricate process to go through in order to become a member of the State Farmers' Institute. and I have heard it said that admission to the Institute was attended with a membership fee of five dollars. We have had various rumors flying about on this subject and I wish to embrace this opportunity to explain what constitutes membership in the State Farmers' Institute.

There is no initiation fee or membership fee, but each and every farmer in the state of Ohio is a member of the State Farmers' Institute, which embraces all persons following agricultural pursuits in the state. If there is anything in the world that is yours, it is the State Farmers' Institute. We do not even have a list of membership. Those who are in attendance are its members and the farmers of Ohio, generally speaking, constitute the membership of the State Farmers' Institute, if they present themselves and make themselves such by attending its sessions. Every one present is as much a member as his neighbor to the right or his neighbor to the left, and I am very glad of this opportunity to explain it to you, because I know there has been a widespread misunderstanding in relation to it. There has been a feeling among some people—how engendered I know not—that certain ones are members of this Institute while others are not. We are all its members. The State Board of Agriculture is yours and it is trying to manage these Institutes for your benefit.

President Bradfute: Now, gentlemen, we will have this morning a little change in the regular order of the program. You will notice that the forenoon session today is devoted entirely to a discussion of Farmers' Institute problems under its various phases. This discussion is to be opened by men whom you all know and men who are leaders in this matter throughout the state of Ohio. Some of them indeed are national leaders. It has been thought wisest this morning to have the three addresses, one following the other, in succession and then to have the general discussion upon all three after the addresses have been delivered; so that you can all load your guns and be ready for a general discussion of all three topics after the three speakers have gotten through, and you can make a general charge upon them then if you like.

The first of these addresses is by Dr. W. I. Chamberlain, of Hudson, Ohio, on the subject, "The Ideal Farmers' Institute." I now have the pleasure of introducing to you Dr. Chamberlain—in fact, he needs no introduction. (Applause.)

Dr. W. I. Chamberlain, of Hudson, Ohio, then read to the Institute the following address:

THE IDEAL FARMERS' INSTITUTE.

By DR. W. I. CHAMBERLAIN, Hudson, O.

I am asked to write upon this general subject, but I take it the question I am expected to answer is this, "What is the Ideal Institute in Ohio now and how may we secure it?" But in order to answer this question wisely it may be well to compare our present conditions and the work adapted to them, first, with the conditions in Ohio eighteen years ago when the work began, and, second, with the conditions existing in other states.

Ohio is unquestionably the pioneer in the work of the distinctive county farmers' institute; the first one of this class ever held in the United States was held under the auspices of the Ohio State Board of Agriculture in Wooster, Wayne county, O., the Tuesday and Wednesday before Thanksgiving, 1880, with Prof. N. S. Townshend, now deceased, and the present speaker as the managers and lectures. On Tuesday morning when that institute began, the thermometer stood at eighteen degrees below zero, and that was but a fair type of the degree of coldness which existed at the time with reference to institute work. The city of Wooster was wholly uninterested and the institute would have been an utter failure had it not been for the courageous work of the Apple Creek Grange, of which L. C. Reichenbach was Master or at least a leading member. A small company gathered in a large, forlorn hall over a great tin shop, and the incessant hammering of stove pipes below, to conteract the zero weather, made it almost impossible even for the few who were present to hear what the lecturers said. Nobody seemed to know or care that here, under these discouraging circumstances, was beginning a work which has since spread all through the United States with unparalleled success. The methods at that time, under such circumstances, were necessarily primitive and defective; now they must be educational. Then we had to get the audiences; now we must feed them and instruct them. Prices of farm products then were good, agriculture was prosperous and, especially in the fertile counties of the state, the farmers were "rich and increased in goods and in need of nothing" and they did not care either to be instructed or helped; they did not feel the need of help; but now we have an era of low prices, of great competition, to some extent of agricultural disaster, and all over the state the farmers feel in bitter need of actual instruction on new and better methods, definite instruction, I mean, and not mere general essays on the importance of this or that.

To return for a moment to those former days; it is almost impossible to believe the apathy and distrust that existed. Except in country localities where the institute was backed and supported by a strong local grange or farmers' club, the audiences were pitifully small at first and pathetically distrustful and suspicious How well do I remember the first institute held in Celina, Mercer county, under the local auspices of Thos. J. Godfrey, banker, lawyer, state senator and farmer. It was held in the court house and the time announced was 10 o'clock. At half past 11 we had a bare baker's dozen present, mostly of court house officials or village good-fellows. This was true in substance wherever the institutes were held in towns of considerable size, especially where held at the county seat. The evening audiences, particularly, were at first so small that oftentimes the meetings adjourned without any lectures or exercises. Under such circumstances it was absolutely necessary to furnish more or less of entertainment in the evening. The farmers, as a rule, went home and unless we had a village audience we had none, therefore the young people were encouraged to come out and take part, and the lectures were purposely of a general, social character, oftentimes of a more or less humorous character; and this necessarily held true until the audiences, especially in the evening, began to be large. At first some of my serious friends objected to so much of humor in my own earlier lectures; I simply quoted to them the old recipe for cooking a fish, "first catch your fish." I said, "Friends, in some way we must interest the audience in order that they may spread the news and the audiences may be larger, then we will 'cook the fish.'"

Now all this is past; the day of entertainment, of humorous recitations and lectures, of bouquets of funny stories thrown by the speaker to the audience, has happily passed, and the day of instruction has come. Right here let me enforce this point, that humorous ancedotes apparently lugged in simply for amusement are, and always have been, wholly out of place. If a funny incident briefly and pointedly told can clinch or enforce an important truth, then all is well, but to begin by throwing a bouquet of jokes seems to me, now at least, entirely out of place. At a recent banquet, a good friend of mine who was called on to respond to a somewhat serious sentiment, began by telling four short, side-splitting stories, and when he had done telling them he said, "I have a chromo to offer as a prize to any one who will show the least connection between these stories and my serious speech, which is now to follow." That was all very well for an after-dinner speech at a banquet, but will never do now for an institute.

First. My first thought then is that the ideal institute in Ohio now must develop and strengthen the idea of self-help. This idea of self-help has indeed been prominent in Ohio from the first. Our agricultural population in Ohio is English speaking, intelligent, receptive. In Wisconsin, where I spent part of one winter lecturing and in Minnesota the population is largely foreign, especially Scandinavian, and there the institute idea is that of the one man power, or of the traveling school. A complete force of lecturers goes from place to place and unpacks and distributes its knowledge to the waiting farmers. I do not mean this as a burlesque; it is to some extent a necessity in such regions; but not in Ohio. Here the local men do and must work up the local institute, must furnish a few live papers from the best specialists and farmers in the region, PAPERS, I say, not rambling talks, for the average farmer will condense his ideas far more, and in a given length of time will impart far more of his own valuable experience, if forced to commit his thoughts to writing than if he gives an off-hand speech which, with his training, is apt to be an embarrassed and a rambling one.

lecturing, and in Minnesota the population is largely foreign, especially Scandina-

Second. My next thought is that the state lecturers must be of two classes. First, the thoroughly scientific, furnished usually by our experiment station and state university, or other scientific schools. Second, thoroughly practical men, usually farmers, stockmen, fruit men or market gardeners. Neither of these two classes, in my opinion, should ever use, or be tolerated in using what is known as cyclopedic knowledge, collections of statistics and abstract theories. If they do this the prejudice against "book larnin" will be well founded. Instead of this the lecturers of both these classes should give the actual results of their own experience, together with the conclusions and advice logically drawn from the same.

In particular, let me urge the scientific lecturers, if possible, to commit what they have to say either to writing in full or else to have before them in writing a definite abstract of exactly the points they wish to make and the time at their disposal for each point. My observation has been that this class of speakers is largely inclined to forget that they have not, as before their classes, a full hour each day for a full term to dwell on some subject, but a single half hour into which the most important and vital facts and conclusions must be condensed as if by hydraulic pressure.

To the second class of lecturers, practical farmers, horticulturists and the like, let me say, do not, I beg of you, give general essays on the importance or advisability of this or that practice or method, but instead give definite and specific facts from your own experience to show how you have accomplished this or that particular thing of value to your brother farmers. This point I deem of such vital importance that I wish to illustrate it. Briefly, for example, instead of a general essay on the importance of diminishing the cost of production, give actual facts to show how you have diminished its cost on your own farm, in your own orchard, dairy, or stock barn. Or, again, instead of general remarks on the importance of eliminating the middle man and coming into close contact with the final consumer, show from your own experience exactly how you have accomplished this result. Again, instead of urging your dairy friends to discard unproductive cows, and enforcing your advice from brilliant examples from the stables of wealthy men like Havemeyer, Morton and Morgan, with their large farms and elegant and palatial barns along up and down the Hudson river, where they have lavishly expended tens of thousands of dollars to secure an amazing butter record or milk record in a few cows at a probable cost of one dollar a pound for butter and ten cents a quart for milk—instead of this sort of thing, tell exactly how in your own dairy for the past twenty years, with scales and pails and Babcock tester and careful records you have gradually as your purse would allow and on a money making basis, thrown out the less productive cows and filled their places with younger ones raised by yourself from your own best cows and from sires descended from some great milk or butter producer; especially show that you have made it pay and how.

In my own observation those lectures are the most valuable which are packed fullest of actual facts from the speaker's own experience and in which these facts are clearly enforced to the eye as well as to the ear of the audience by charts and diagrams and tabulated statements printed or written on large sheets of paper. These convey the ideas so clearly that the audience hold them before the eye for comparison until their essential points are fixed forever as a picture upon the memory. As a rule not only farmers but most men of moderate education are simply children of a larger growth and the kindergarten method of instruction through object lessons is the one that always does and always will win with such audiences. I think that probably the most valuable lecture I ever myself gave was the one on drainage, which I gave in many places, illustrated by large diagrams showing the actual system of mains and laterals on seventy acres of my own land, where more than sixteen miles of actual tile drains have been laid chiefly by my own hand. In this lecture, too, I usually brought before the audience the principal implements and tools used in cutting the drains, laying the tiles, filling the drains and handling the tiles,and showed as well as could be done on the stage and not in the actual soil, just how those tools could be most deftly and effectively used. The best lectures I have heard on barn building have been illustrated by actual perspective views, elevations and detailed frame work of a given barn, showing clearly the economical features claimed in this particular construction. Sometimes even a model of the actual framing and construction is exhibited. In such a case as this all those who are intending soon to remodel or build a barn go home with definite and specific ideas as to the important economical and structural principles involved.

Third. The third general point I wish to make is that the speakers and their instruction must be adapted to each locality. I do not know and cannot conceive of a better plan than the "Ohio idea" for securing this. First, the list of speakers is carefully selected by the Board of Agriculture with a view to their adaptation, and each one is requested to furnish a full and definite list of the subjects he is prepared to speak upon definitely from personal experience. This list of speakers and topics, as you all know, is published in the Bulletin. Then local committees select from the topics of the lecturers assigned, those in which in their judgment their local community is most deeply interested or most needs instruction upon. The local committee, if at all wise, selects from the local farmers, orchardists, gardeners or stockmen those who have valuable personal knowledge and who can communicate it in an intelligent and instructive way. Oftentimes this system of bringing out local talent afterwards furnishes the very best of what are known as our state speakers, who are employed for several weeks in giving valuable facts, communicated at their own institute, in other communities.

Fourth. An ideal institute should always begin promptly on time and should seldom, if ever, depart from the printed program. In particular, no local officers should ever permit a change in the time or place on the program assigned to any local or state speaker in order to give the said speaker a better audience. Such action, again and again in my own observation, has been the just ground of complaint and of hard feelings toward those who have asked it. Again, each speaker, even each state speaker, should be held strictly to the time assigned him on the program and the full time assigned should be left untrammeled for the discussion of each topic. Still further, the questions that come in for a given speaker to answer either *viva voce* at the close of any lecture or in the form of written questions in the question box, should be answered with the utmost brevity and conciseness. No speaker thus questioned should ever be permitted to make a given question a text for a new speech. Some speakers have this tendency strongly developed; they are so full of their topic that when you once open their mouths with a question it is hard to shut them off; they must, however, be shut off or the institute is injured and the general work hindered or thwarted. As a rule, the chairman should be one who is widely acquainted with the best farmers in the locality and who can judiciously assign questions, not simply to the state speakers but to specialists in the audience who are well qualified to answer them.

It is well also on opening the question box and on opening the discussion on each topic for the chairman to call sharp attention to the fact that all answers to questions and all discussions of the topic must necessarily be exceedingly brief. I doubt the wisdom of appointing anyone beforehand to lead in a discussion with a five or ten minute speech. In my observation this usually results simply in a repetition and enforcement of the good points made by the given lecturer. It is far better to have a spontaneous, rapid firing in of questions from all parts of the audience to be answered promptly and rapidly by the given speaker.

It goes without saying that questions of party politics and of denominational religion should be left out of the institute, but I think this very proper rule of the State Board should never be construed to exclude important discussions on economic, sociological or moral questions which are not at the time involved either in party or church controversy. It will be necessary, however, for the chairman promptly to close any discussion which begins to be heated or acrimonious along any of these lines. The institute should and must be kept thoroughly alive, cheerful and good-natured from start to finish and to this end the local committee and especially the chairman and the state speakers must constantly and harmoniously work.

At the conclusion of Dr. Chamberlain's address, President Bradfute said:

As I announced at the opening, we will reserve the discussion of these questions until all three addresses are concluded. The next address on Institute problems is by Mr. F. A. Derthick, of Mantua, Ohio, his subject being "Best Methods of Conducting Farmers' Institutes."

Mr. Derthick: Mr. President and Gentlemen of the State Farmers' Institute, I am glad that Dr. Chamberlain devoted so much time—and it seemed to me to be in order from his topic too—to the matter that should go to make up the program for a Farmers' Institute, for I am to deal more directly with the manner of conducting it. I suppose, however, it will be impossible for three of us to read papers upon practically the same topic without trespassing to some extent. I am glad that I come before Professor Lazenby. I don't know that I just relish the position which I have been given, namely, that of the meat in the sandwich, inasmuch as the Secretary has placed a college president on one side and a college professor on the other. (Laughter.) However, I have prepared a short paper which I will now read.

Mr. F. A. Derthick, of Mantua, Ohio, then read the following address on the subject:

BEST METHODS OF CONDUCTING FARMERS' INSTITUTES.

By F. A. DERTHICK, Mantua, O.

The institute that we are to conduct in this short paper is. of course located in a community where there are at least, several wide-awake, progressive farmers, possessed of a missionary spirit and willing to work.

The paper that is to follow this will no doubt treat of the necessary preparation for an ideal institute, yet it may not be thought a trespass to venture a few suggestions along that line. To hold a successful meeting it is almost indispensible that the local press should be in a friendly attitude and anxious to champion the cause. The local papers should early call attention to the approaching institute and urge the importance of attending. A good beginning is to call a public meeting, through the papers, inviting all who are interested to meet at the home of the institute and share in the arrangement of a program. To provide against failure to respond, personal letters should be written to progressive farmers in various parts of the territory tributary to the institute, urging them to be present. The list of topics treated by the speakers assigned should be submitted to this meeting and those subjects chosen that promise to be of most interest to the largest number who can be induced to attend.

The common practice of using both state speakers at each day session is one of doubted wisdom. Generally speaking, that is the most valuable institute in which the greatest number of citizens are participants. Such participants may read papers, give talks, engage in discussions, or ask pointed questions.

The individual membership of an institute is the source from which must come its usefulness and vitality.

Whenever and wherever the local talent can be interested and induced to act, there follows the death of your institute or of my institute, and there rules in its stead the broader conception of its being our institute, and all feel that they are not only welcome to it, but welcome in it.

It is fatal to the success of any institute to begin work on the day assigned by the State Institute Committee; it should really begin some weeks previous to this time. The two days named in the Institute Bulletin mark only the conclusion of the whole matter. The real work must be done before. At the general meeting, before mentioned, topics may be chosen, local talent determined upon, pledges of support given, after which the president and secretary, acting with the advice and consent of the Executive Committee, should be empowered to arrange all the details.

The president should be chosen, if practicable, from the home of the institute. He should be a man in close touch with the best interests of the community. A man of ideas, and of affairs. He should be a kind hearted man, a level headed man, a man whose rulings will be prompt, positive and correct. He should be a man who has plenty of "grit, gimp and git."

The president, or secretary, or both, should at once find whether those chosen to take leading parts will accept the invitation and promise to be present and prepared when their names are called.

To project and carry out a program that shall bring before the institute, for satisfactory discussion, such topics as shall prove of interest to the majority of the community, and at the same time include something attractive and profitable to the young, is no easy task.

Those branches of the stock interest found in that locality must find a place on the program, special lines of farming as carried on, or that may be carried on profitably, should be remembered. Horticulture is of growing importance, while restoring and maintaining the fertility of the soil is always in order.

Much depends upon the assistance of the ladies, and their presence, wants and desires should be always recognized. Questions of household economy, cultivation of flowers, and the adornment of the home will find earnest and competent adovcates among the ladies. The farmer and his wife go hand in hand to the institute and neither should stop short of the rostrum.

Occasionally an institute is held with no lady participating save by her presence. The State funds belong as much to the mothers, wives and daughters as to the sterner sex, and it would be but a fair turn-about if the latter were invited to five successive sessions of an institute given up to the discussion of things feminine; the number of pounds of batting necessary to make a regulation comforter and the frequency with which it should be tied; the *modus operandi* by which that mystery of all mysteries is solved when a score of ingredients such as eggs, molasses, sugar, vinegar, flour, nutmeg, allspice and gumption are so combined as to form that unfailing passport to a man's heart, the road to which is said to be through his stomach.

Do not forget the young people. In every community in Ohio, there may be found young ladies and gentlemen who can both entertain and instruct an institute. Invite two young men to discuss some question of common interest to the locality, the county or the State. Secure a young lady or several of them to favor the institute with solos at opportune times. Popular young ladies or gentlemen who consent to give recitations or read papers, will not only be present themselves but will generally bring a number of the young people of the neighborhood. A recitation, requiring but a moment for delivery and given by a child, will not only please and stimulate his companions as well as interest those who are older, but will often win the parents who might not otherwise attend. They will feel a pardonable pride in knowing that Susie or Johnny is to speak at the institute.

That institute is a dreary one in which no provision has been made for music. It is generally of more interest if the music be varied. The songs to a good degree should be in harmony with the character of the assemblage, suggestive of the farm or farm life or something kindred. As the time for holding the institute approaches our model president, if possible, will personally see all who have agreed to take part. He will find out how they are progressing with their papers, the lines in which they are going, remind them of the time allotted to them, and, in short, know what they are going to do at the institute. This will enable him to select beforehand the most suitable person to lead off in the discussion of each paper. Our model president will also find out if the promised recitations are to be ready, and whether they come within the time that can be given. He may advise as to whether the song or recitation be appropriate, but he should and will decide whether it be proper.

The audience may at times be surprised but the president and secretary should never be; they should always know just what is coming. Nothing should be allowed from the rostrum or floor, that would give to any worthy attendant or citizen just cause for complaint. While the conductors of the institute are thus engaged, the local editor, realizing that anything that benefits the farmer benefits him, will keep constantly before his readers the time and place for holding the meeting; he will seek to dissipate any prejudice that may exist and urge all to attend the various sessions.

A liberal number of programs should be prepared and a portion sent by mail to parties living more remote from the place where the meetings are to be held. Do not forget to send the state speakers a copy, with directions how to reach you from their preceding appointment. Get the home editors to print the programs (at a reasonable price of course), also a few bills. Talk about the institute, work it up, advertise it. This is an era of advertising and if one does not talk about his business no one else will.

The president is at liberty to call upon all working members to execute his plans, and when the day arrives the town should put on an institute appearance. If it is reached by rail an announcement should greet the visitors at the depot. How helpful and refreshing it would be upon arriving to find the town "Billed" for the institute. "This way to the Farmers' Institute." "This car or carriage to the Institute—all aboard." How much it would contribute to one's peace of mind to see a banner stretched across the street, bearing the words, "Farmers' Institute today, walk in." And at the corner of the principal street, or at the door of the institute hall, a bulletin board, giving the details of the institute. These would be such indications that the wayfaring man though an institute speaker might find the way.

Our model president will be early at the hall to see if his janitor is on duty, with the thermometer registering at least 70 degrees in the audience room. Nothing is more fatal to the success of an institute than for word to go out that the room is cold and uncomfortable. Should the attendance be large, ushers previously appointed, should be prompt to act, filling the front part of the hall first, should have in mind all vacant seats and quietly conduct or direct new arrivals to them. The ministers of the town should be invited to be present and assist at the opening exercises. It is usual, and very appropriate, for the mayor of the town, or some one authorized to represent it, to extend a welcome to the visitors. It is appropriate that the president should respond to this welcome, acknowledging the interdependence of country and town and expressing the hope that the most kindly relations may exist between the two. He may, at the same time, briefly declare the plan and purpose of the institute and suggest the methods by which he hopes to conduct it.

The program once printed should be followed as closely as possible. No one not on the program should expect to be allowed the courtesy of the rostrum except by invitation from the president or the audience. No one should be allowed to "steal the audience" for the purpose of riding a hobby, venting his personal spite or advertising his wares. It often happens that the program devotes almost an entire session to the consideration of some leading and important farm topic. Some one or several may have made an extra effort to attend that particular session and if they find that some other subject has been substituted, or the original one abridged, they are disappointed and lose respect for and confidence in the institute. When one or more papers have been read upon a given subject, the discussion should be held strictly to that subject. The president should not allow the audience to wander from the subject in hand, he should be alert, not given to speech making, yet quick with brief suggestions and helpful ideas. He should encourage discussion and questions so long as they are marked with vigor and interest, but before a drag comes he should promptly pass to the next number on the program.

The audience can be rested by music, recitations, and change of position.

When a speaker, either state or local, undertakes to talk on a given farm topic, he implies that he has well matured opinions, based upon actual experiments made upon his own farm. At the conclusion of his address he must not demand by his manner or in other ways that his views shall meet with the endorsement of the institute. He must expect to be subjected to the fire of the questioner. Both criticism and questions may be searching and severe, yet he must sustain himself good naturedly, according to all courteous treatment, even though he detects sarcasm or incredulity in the tone of discussion. An indication of undue conceit, intolerance, or an arbitrary spirit will build a wall between himself and his audience, and his usefulness is practically ended. Should a question be asked him the answer to which he does not know, he will more surely win the confidence of the audience by frankly confessing his ignorance than by attempting to answer. The sooner he realizes that almost any one can ask a question that no one can answer, the better it will be for him.

It must not be understood from these suggestions that there is frequent friction between the speaker and the audience, for the opposite is true. It is a matter for congratulation that in the institute as now conducted in Ohio there is almost invariably a cordial feeling prevailing between the audience and those who take part. All who have experienced will testify that at the close of most institutes a fraternal regard is experienced among those who have for two days been thrown together in a school the purpose of which is to raise the standard of American citizenship and improve the condition of the tillers of the soil.

At the conclusion of Mr. Derthick's address, President Bradfute said:

The next subject on the program along this line is entitled "The Essentials or Requirements of an Ideal Farmers' Institute." The address upon this subject will be presented by Professor W. R. Lazenby, of the Ohio State University, of Columbus, Ohio.

Professor Lazenby: Mr. President, I see that Mr. T. C. Atkeson, Professor of Agriculture in the University of West Virginia, is in the audience, and I suggest that as a matter of courtesy we invite him to a seat upon the platform. (Applause.)

President Bradfute: We would be very glad to have Professor Atkeson come forward and take a seat upon the rostrum.

After Mr. Atkeson had taken a seat upon the platform, Professor W. R. Lazenby, of Columbus, Ohio, read to the Institute the following address:

THE ESSENTIALS OF AN IDEAL INSTITUTE.

By Prof. W. R. Lazenby, Columbus, O.

I have been much interested in Farmers' Institutes ever since they were first established, and have a firm conviction that there are few organizations that make a better return for the time and money expended. Good as the Farmers' Institutes of Ohio are, I believe they might and should be better. Were this not so there could be neither cause nor reason for this session today. Anything that is not susceptible of improvement is past the stage of discussion.

Since the best part of Farmers' Institutes are the people who attend, I shall begin with them. We shall agree, I think, that the chief business of life is education. We may not be in full accord as to the ultimate objects of education, or as to just what direction our education had best take, but we must all admit that we are here in this world to learn and to teach—some of us for the former. Those who attend Farmers' Institutes should be either learners or teachers, or both. As comparatively few go as teachers, the great majority must be classed as learners. What are the essential conditions, the prime requisites for learning?

The first is a willing mind, or desire to learn, and with this a disposition to put forth the necessary mental effort to acquire knowledge. There is no royal road to learning and those who think that a farmers' institute is a sort of a patent system of easy education are grievously mistaken. No lecturer or teacher at our Farmers' Institutes, whatever his abilities may be, can force instruction upon an unwilling mind. The horse can be led to the water but he cannot be made to drink. An indifferent, apathetic, persistently inattentive man might attend institutes all his life and learn little or nothing therefrom.

It is the glory of our Ohio Institutes that there are few of this class. In my experience by far the larger part of those who attend have an invincible willingness to be made wiser today than they were yesterday, and have a lively faith that observation, and reflection, thought and study, are just as essential and serviceable in the great art of farming as in any other pursuit. Still we live in a conceited generation and the man who "knows it all" is occasionally met with. Besides a mere willingness to learn, there should be an eagerness, and an absorbing desire to make the most of the opportunity presented. That Biblical injunction, "Ask and ye shall receive; seek and ye shall find; knock and it shall be opened unto you," plainly implies that if you do not ask, or seek, or knock, you cannot expect to receive or find or have the door opened for you. Yes, the ideal or perfect institute must have good learners as well as good teachers.

But what is a good institute teacher? Is it not one who, fitted by nature and training, delights to wrestle with ignorance, finds joy in dispelling superstition and prejudice, and has a genuine love for imparting knowledge? In an age so eventful and stirring as ours, an age of science and philosophy; of books and newspapers; an age when every farmer's son may be educated if he will; it is not strange that there be many who aspire to teach, a vast multitude who are ready to take the part of monitors and enlighteners of their fellow men. This is well, and so long as the needs of our race, both material and spiritual, are so pressing we are not likely to be surfeited with teachers. The prime essential of a true teacher is a hearty, intrinsic, enthusiastic love of work. I greatly fear, however, that of the legion who aspire to teach there be not a few who seek primarily and mainly their own advancement.

Is it not possible that there are aspirants to the ranks of institute speakers who are impelled to seek the position, not so much because the farmers need to be taught, but because they themselves must somehow be fed?

Probably there is no institute worker present who has not felt that certain institutes where he has been a speaker have not been all that they might be. In other words, you have realized that they should be improved. The question for us to consider is how. As our institutes are composed mainly of the people who live in the town or township in which they are held the reform must begin with them. In my experience failures in institutes, for which the people are responsible, may be said to be due either to nonattendance or inattention. An institute without the attendance of those for whose interests it was organized, is like a flouringmill without grain—it may run but nothing is accomplished. If the attendance is good and any considerable number of those present are there with no desire to learn, with no belief that they can be taught anything, the institute must necessarily be a failure. Such a community must be patiently shown that a well directed Farmers' Institute can and should teach much that will serve them in their vocation.

If it should be seen at any institute that the people in attendance have come in quest of amusement, they should be entertained until their attention is gained.

Just here is a trying place for the inexperienced institute teacher. I have sometimes thought that of all mortal opportunities for self-depreciation, for instruction in humility, for a realizing sense of his own weakness, that of a public speaker who fails to hold the attention of his audience, is the best. If there is anything more distressing, more pitiable, than the position of one whose business it is to entertain or instruct and who anxiously tries to do the one or the other, yet feels that he is signally failing to do either, I have never seen it. With our popular, experienced, winning workers, this is not likely to happen, and those of less experience, less popularity, if they have a message to give, need not be discouraged, although it may at times appear that a majority of those present regard the institute much as they do a circus or horse race, taking no interest in it except as it may afford them amusement for the passing hour. Humble worker in the ranks of institute teachers, do not yield to discouragement. If you have patiently wrought out by your own thought and labor any new or improved method of farm, orchard or garden practice that will lighten even the least of the farmers' burdens, out with it, I pray you. If you have aught to say that if uttered will cheer the weary, give hope and strength to the toiler, cause youth to strive for higher ideals, make men and women braver and better, let your light shine. If you have *something to say* and really *say* it never fear but that it will find or make its way to the minds and hearts of those fitted to appreciate and profit by it.

The essentials of an ideal institute thus far considered have been those of *purpose* rather than management. Let us now briefly consider some of the essentials of *method*. In my judgment the points now in demand for an ideal institute, or those that will make our institutes as near the ideal as possible, may be enumerated as follows:

1. A wise selection of officers and speakers.
2. A well arranged program.
3. Judicious advertising.

It will be observed that the above named essentials apply to work that must be done before the institute is held. These points have been so freely and fully discussed that I have little to add. In the matter of program, I have thought that in some instances there was a lack of what may be termed *adaptability*. For example, I have never felt quite at home when speaking upon some subject pertaining to the orchard or garden in a community where the dominating interest was dairying, and Professor Hunt tells me that he has felt that his purely agricultural subjects were not appreciated in some of the distinctly horticultural sections of the state. There are several ways in which our institutes could be more efficiently advertised. In the first place the officers and other active members might, by dividing the work, make a house to house canvass of the district represented, and after presenting the claims of the institute secure pledges of attendance. By such a personal visit and invitation I am sure many would be incited to attend who now stay away.

Again, almost any well organized institute could add to its interest and usefulness by offering some award of honor for general and special proficiency in farming. If a suitable medal or diploma could be proffered for the best managed farm, another for the best arranged farm buildings, another for the best acre of potatoes, sugar beets or other crops; another for the best garden, and one for the finest house yard or best kept grounds about the house, others for the best yield of eggs and butter, and so on, I am confident that a decided impulse would thereby be given to agricultural progress. These inexpensive tokens of merit might be awarded at the annual meeting of the institute, at which time short papers or reports might be presented by the successful competitors.

Among the essentials when institutes are in session I would name, (1) *Promptness;* (2) *Clearness;* (3) *Brevity;* (4) *Affability;* (5) *Opportunity for General Discussion.*

I believe it was General Washington who said "promptness is an angel virtue," a proposition that can scarcely be disputed. Promptness is certainly an essential for ideal institutes. The proper exercise of this virtue depends largely upon the presiding officer. He sets the pace, and ought to be literally ' up to date" in everything he does. Promptness should not stop with opening the exercises on time; there should be promptness in closing certain exercises as well as in beginning them; promptness in suppressing disorder or confusion; promptness in repressing all irrelevant talk, all ill-natured personalities; all straying into the forbidden regions of partisan politics or sectarian theology. Promptness is the only way of doing all that ought to be done, and leaving undone all that ought not to be done.

Clearness refers not only to the matter presented, but to the manner as well. One of the most desirable objects of attainment for an institute worker is clearness of thought. Then there should be clearness of enunciation, a clear, distinct articulation of words.

If brevity is the soul of wit I fear the wit of some Farmers' Institute speakers is soulless. Boil down what you have to say. Leave out the adjectives and adverbs. Plunge right into your subject; and when you have made your points, stop. Brevity is particularly essential in answering questions. Everybody who attends a Farmers' Institute should be good-natured. An institute should be a school of good fellowship.

I fear that in some quarters there is a great and growing tendency to "turn the laugh" on speakers and questioners. This may be done in apparent good humor but it is not true courtesy, much less affability. We should never forget that a personal jester is a dangerous friend.

The last essential I have named is "Opportunity for General Discussion." I believe that as far as possible the topics presented at Farmers' Institutes should be open to discussion by all present. The diffident and the young should be especially encouraged to briefly state any facts within their knowledge which are pertinent to the subject. Let every person in attendance feel that he has at least the privilege of contributing in a few words anything that he can say calculated to shed light on the subject.

Finally, we need more thought, more study, more painstaking, careful preparation on the part of all who attend our institutes, whether as teachers or learners. If this is given there are few institutes that can ever fail to be a source of equal pleasure and profit.

At the conclusion of Prof. Lazenby's address, President Bradfute said:

Now I presume that all of you have done as I suggested and you have your guns loaded by this time for the gentlemen who have addressed us. All of these subjects are now before you for general discussion.

Mr. McCormick, of Gallia county: Dr. Chamberlain's interesting paper this morning took me back to some years ago at a local institute away down in southern Ohio. I think the Doctor was there and I think he was describing our situation. I have been very much interested in this part of the Farmers' Institute, because we have felt that some effort along this line was needed to interest people who are on the outskirts. The State Board of Agriculture sends out lecturers who have been received cordially as a rule throughout the state, I believe, and sends men who are well equipped for the work, and yet there have been some instances where the local surroundings of those speakers and the subjects which have been assigned to them were to a certain extent not suitable to the place to which they were sent. I think this is a point that ought to be considered as far as possible by the secretary or by the committee in making up their selection of speakers.

There is one other point I want to emphasize and which was touched upon by the speakers this morning. That is in regard to the election of officers. We sometimes find men who are elected to office because of the supposed influence that they may have in the community. We may say that we elect them from policy. We have pursued a course of that kind when we were right on the ragged edge and were fearful that we could not sustain an institute of any kind. The result was that it almost buried our institute. It was decided that the institute should be held at the county seat. I had access to the local paper in the town and the institute was well advertised for three, four or five weeks. Every little point that could be brought into play to make it a success was brought before the people and we filled our town full of farmers and yet we did not have a corporal's guard in the institute. We saw at once that something else must be done. We moved it into the country and for years now the crowd has only been cared for by having the capacity of our institute building tested to the fullest extent.

There is another point that Brother Derthick speaks of in regard to the responsibilities of the secretaries of the various institutes in reference to corresponding with speakers. If a secretary neglects his duty, the state lecturer may be sent down to deliver an address before an institute which is held in some little country church away out in the country near no postoffice. The state lecturer may not know where it is, and be put to a great deal of trouble and inconvenience by such neglect. A very important duty rests upon the secretary to notify the speaker when and how he will arrive at his place of destination. I do not think this feature of the work can be emphasized too much, because, having come in contact with a number of state speakers, I have had detailed to me the experiences of several of them that have been dropped down in the country several miles from the place of the institute, and who have had to secure private conveyances to reach the place where the institute was held, and probably have some trouble in locating where it was to be held. That ought to be avoided, by all means.

As to the arranging of program, I have exchanged programs with a number of Farmers' Institutes near us and I have received programs with twelve and fifteen topics crowded into a two or three hours session. It seems to me that that difficulty ought to be remedied. I would not arrange in a program for over three topics to the session, and I would never put a person on a program without having an understanding with him that he should prepare his topic in such a concise form as to leave ample time for the discussion of questions raised. I would rather encourage the putting of questions *viva voce* than to have a lot of written questions put in after the subject has grown cold.

Mr. A. L. White, of Muskingum county: I would like to have Mr.

Chamberlain speak just a little further with regard to what the conduct of the speaker should be before a solidly packed house when it seems to require all the power of the speaker to keep the attention of his audience.

Another question. He spoke with regard to chart and figures. Would he recommend that these charts be made by the speaker, as a rule, even though they should be rather rude looking?

He also spoke of the time of commencing the institute. In our work we appoint, in the spring following the institute, two or three men, and sometimes more than that, to commence to prepare for the institute for the next season in the line in which they are engaged. I would ask Brother Derthick whether he thinks that is proper?

Dr. Chamberlain: In answer to the first question, I believe that each speaker should go before any audience, large or small, with the determination that he will use his very utmost endeavors—whatever powers God has given him—for communicating whatever he has of value to that audience, and then I will risk that speaker. If he is not thinking about himself or how he looks or what he is going to say, then he is all right. Let him go ahead and do his best and I will risk him.

As to diagrams, etc., if a man is able to make those which are intelligible and which will enforce and illustrate his ideas, he may make them himself; if he cannot do so, then let him secure the aid of an architect, or a draughtsman, or some one who can go ahead and do it, so that his illustration will be readily seen and appreciated.

Mr. Derthick: I have in mind some institutes in this state where the work is very often done by comparatively few. I have in mind a few institutes which never suspend their work in this line. Just as soon as one institute is over they begin to get ready for another. They remain in the field. They stay on deck continually.

Mr. J. M. Jamison of Roxabell: So far as I can gather from what has been said, these gentlemen have told us something about how to handle an institute after it has been started, after the time has been set and the meeting opens. Now I rise to my feet to spring a question that I do not know of having been touched upon before and it is this, how shall the secretary or executive committee work to get a program in the best shape and to get the material for the program?

When these institutes first started they tried in the Grange of Ross county to start them at Kingston. The people were afraid to take hold of it at Chillicothe. I know a neighbor of mine, since gone to his rest, who urged that they send it out to our township and let us try it there. I could tell you a long story of how we worked to get that institute started. The first was held in the country near Kingston under the auspices of a Grange organization. After we had one or two sessions it went back to Kingston and then we dropped it for a year or two until we got the state fund to help us out. Then we started it again, but I have been secretary, with a helper, ever since the institute started and there is no one who attends the sessions of the institute who does not get more out of it than I do. I work to see to it that the people who attend the institute enjoy themselves. I have made it a study. The assistant secretary has worked with me right along to make an institute which would be a benefit to all. I find several difficulties in working up an institute. For instance, I write to some farmer whose name has been recommended to me, that I will be glad for him to help us and ask him if he will furnish us a paper, but there are many farmers who would rather feed cattle a week than spend five minutes in answering a letter; consequently a week or so goes by before I hear from him. By that time I have been put on the track of some others. I write them and by the time I am ready to make up a program all these dilatory and all these prompt people come in and accept, and consequently we have about twice as much material as we need for the program. Now the question is, if I drop some of these people they are going to be mad, and if I put them on we have too much. I have been trying a plan for two or three years to get the people to come out and say for themselves what they want on the program.

Some three or four years ago we adopted the plan of giving notice that on a certain day there would be a preliminary meeting to organize, and we would then have them say what they wanted on the program. Three years ago I bought twenty-five postal cards and wrote personally to twenty-five men to be present at that meeting. The result was by sending out these postal cards and by personal efforts we had nearly forty men present at that preliminary meeting. When I got them there I said "Now, gentlemen, write on a slip of paper what subjects you want discussed at the institute." Several of them wrote out the subject that they would like to have worked. I said "Gentlemen, if you want that subject worked, the best way is for you to start out and work it." That did very well for the first year, but after that I couldn't get them to suggest any thing.

The next year I sent out fifty or one hundred cards and got about the same number of men in. Now, I want to tell you it is a good deal of labor to write fifty postal cards, or one hundred postal cards, even if you have a copying machine that you can do it on, but I cared nothing for that just so they would be prompt and come forward and help us. This year I shall drop off that feature of the work and see how many will come to help us out.

I am also very careful when the people come to attend an institute, to see that the temperature of the room is right. I try to have a good usher, and I endeavor to seat the people so that every man and every woman will feel comfortable, and so they will have congenial companions around them. There is quite a knack in seating an audience so that you will have them feel that they are pleasantly located. You can seat an audience so that half of them will feel that they are in the wrong company, but if a man studies the people of his community he can tell when he comes into the room about where to seat them to make them feel at home.

These gentlemen have told us something about how to manage an institute after it is started; but what we would like to know is what is the best way to get out our programs, and what is the best way to create interest so that we will have a good attendance. I would like to impress upon farmers that when they receive letters from the secretary of the Farmer's institute, it is their duty to answer them promptly and to say whether or not they will be able to do the work requested.

I call to mind one young man in my county that I worked at for four or five years before I could get an expression out of him favorable to the institute, but when I got him there and got him to write, he furnished one of the best papers we have ever had.

In the western part of our county there is an academy located where farmers' boys go to school year after year, and I find it much easier to get institute workers out of the western part of the county than I do out of the eastern part. Why is it? Because they have better opportunities to educate the farmers' boys in that part of the county.

Now, gentlemen, I put out these suggestions or bring out these points for the purpose of hearing a discussion on the subject of how to work up a Farmer's Institute. I have been at it ever since institutes started and I would be glad to have somebody take it off my hands, but they will not. Now if there is any better way than I have suggested of working it up, I would like to have it discussed here. If there is any way to make our institutes better, if there is any way of procuring programs, if there is any way to reach the people better than the way suggested, I would be glad to hear it. I want to know how it is done, if anybody can do any better than we are doing.

If you will pardon me, I want to speak of one other matter. People in attending a Farmers' Institute have gotten the idea, as they have in reference to the State Fair, that one day is better than another, and they go to an institute a certain day because they say it is the best day. I think, however, that the president or the secretary, or whoever is in charge of making up the program, should endeavor to make one day as good as another, the first session as good as the last. If they look at it in that way, and if they work to that end, then I think they can secure as good attendance one day as they can another, but if we have one day better than another, then we have a crowded house on that day and somebody is sure to be disappointed. (Applause.)

M. L. Dickey, of Fayette county, Ohio: I am secretary of the Bloomingburg Institute. I want to state one little point which I have put in practice to bring out the audience the first session. If you get a good audience the first session, the house will hardly hold the audience during the rest of the institute. We receive each year a number of institute books from the Secretary of the State Board of Agriculture. There are not enough of them to go around. There are only a few each year, but we have those books and distribute them at the very first session; perhaps before the first session begins they are all distributed, and the man who comes in late fails to get a book. If we keep following that up each year I believe it will help to bring out a full attendance the first session.

Another way is, not to do as Mr. Derthick suggested, have a speech of welcome and have the chairman respond, but put on your big speaker and fire off your big guns the first session. If you do that you will find good attendance. If you can bring out a good attendance at the first session the remaining sessions will take care of themselves, so far as that is concerned.

Mr. W. N. Cowden, Quaker City, Ohio: I want to call attention to what I regard as an omission in the papers to which we have just listened. One of the ways in which we have created interest in our Quaker City Institutes is by giving one, two or three hours of each institute to the women. (Applause.) We designate that as the women's hour. Any of you who have been to Quaker City will be able to testify to the great interest we have always had at our institutes. We have attributed it to a large degree to the fact that we get the women of our community interested in our institutes, and they in turn interest their families and bring their families with them to the institute.

I wish to ask a question for my own information. Professor Lazenby made the statement that institute speakers or public speakers often make a failure because they fail to get the proper key to their voices for the room in which they are speaking. We have all heard mistakes of that kind made. I know I have made more mistakes in that direction than in any other. When a speaker has the wrong key for the room in which he is speaking, he is laboring at a disadvantage and he is a comparative failure during that speech. What I want to ask is, how to get the proper key.

Dr. Chamberlain: Take a tuning fork. I want to say to Brother Cowden that we do not, in all of the counties of the state, have those bright and blessed little Quaker women that they have down in his section of the country.

Mr. Derthick: I don't think Dr. Chamberlain would dare designate which county of the state they were absent from.

A Member: If you come up to Union county you will find them.

Mr. Wm. M. Gehman, Champaign county: It seems to me that not sufficient importance has been given by the speakers to the executive committee. In my position as president of our local society, which position I have held for several years, I find if we have a good executive committee, one that will begin, as soon as the committee on nominations reports and they are elected, to work for the next institute, we will have plenty of good assistance to make our program both interesting and profitable. I am glad to say that we have had such a committeee in our institute and by the help of a good secretary such as we have—and I wish to testify to the excellent work of Mr. Morgan—we are sure to have a good attendance and an interesting program, even if the State Board of Agriculture does not give us much assistance. I wish to say, however, that the State Board of Agriculture has given us the very best help in its power; at least our people have been very grateful for the speakers who have been sent to us by the State Board.

I will say in conclusion that I came here to this institute this morning hungry. I am particularly interested in the subjects which have come up for discussion this morning. I came here hungry, but these three gentlemen have given us such a feast, such a great big meaty sandwich, as Brother Derthick calls it, that I don't know whether I will be able to digest it all or not. I will do the best I can and will give my friends at home the benefit of it.

Mr. S. H. Ellis: We have had certainly three most excellent addresses at this session, delivered by men who know what they are talking about. It has been a very interesting two hours to me. It has also been amusing to me to see how many different reasons can be given for the want of success of an institute. One of the gentlemen who reads papers says it all depends upon the president, and the ideal president is pointed out. Brother Gehman has given the credit to the executive committee. Brother Cowden attributes the success of the institute to the women. Another gentleman over here attributed the success of his institute to the tireless work of the secretary, and some of those who have addressed the convention attribute the success of the institute more or less to the state speakers who are sent to address these various institutes, and the ideal state lecturer has been described. I have thought that while these young men, Brother George E. Scott and Brother J. E. Wing and Brother C. G. Williams and others, were seated around here listening, that they would feel like the old Methodist preacher down in our part of the country years ago who was a very eccentric man, so much so that his brethren felt aggrieved with him frequently because of his eccentricities and they would labor with him. Finally, he got up to preach on a big occasion and he veered around one way and then he veered around another way and finally straightening himself up he says, "Brethren, I have been trying to preach like Bishop Simpson; then I tried to preach like Elder Walker; then I tried to preach like the Rev. Smith, but now, if you will just keep still and God helping me, I am going to preach like myself." (Laughter and applause.)

You cannot separate the personality of the president from the president himself. He has got to have his peculiarities. The State Board sends me out one week with Brother Wing and another week with

Brother Williams and another week with Brother Scott, and now if we were all just alike we would have flat times, but I get with new men each week who have a personality of their own and they have to carry their personality into their institute work. You cannot make them in one mold at all. There are some general rules that ought to be observed which have been marked out by the speakers who have addressed us this morning, but I like the idea of a personality in the president, one who governs in his own peculiar way, and you cannot put him into anybody else's shoes and make a success out of him. If the Lord did not make him a natural presiding officer, he will never make one and he would better retire and let the other fellow take his place. It is so all through the institute. We can make our institutes interesting and profitable just in proportion as we carry our individuality into them. I do not mean politics. I do not mean Democracy, Republicanism nor Methodism, but our personal individuality, our peculiar style of putting things in our own way.

Mr. John L. Shawver, of Logan county: There is one point made by Dr. Chamberlain that I think ought to be emphasized considerably, and that is the use of charts and illustrations and means of appealing to the eye. During twelve years' experience in the public school room, I have noticed that the eye was always a better pupil than the ear, and if we can present our facts in such a way as to appeal to the eye, we make an impression that cannot help having its force, so I think it is well that this point should be emphasized and that each institute worker should fit himself up with such plats, charts and illustrations as will enable him to bring before his hearers those things which he expects to speak upon.

In some states in which I have had the honor to do work, I find that this feature of the work is much more emphasized than in our own state. While I believe Ohio comes nearest to producing the ideal institute system, there are still things that I like about the systems followed in other states.

In Wisconsin and in Michigan they make a special effort to bring out this very point of illustrating matters which they desire to have impressed upon the memory of their audience, so those states have gone to the expense of fitting up the different corps of institute workers with charts made by good artists, illustrating these various points, and in some instances have even bought apparatus. In Wisconsin each institute corps takes with it a complete outfit for testing milk. Many farmers do not realize that there is a great difference in the cows that they are keeping upon the farm, and if samples of milk can be taken right into the institute and a practical test made there of the various samples, before their very eyes, such an illustration and test is worth perhaps twice as much as any other test which could be made because they see at once the necessity of investigating and testing such matters. They then go to investigating and thus it brings about great improvement in this regard.

By means of these charts, plats and apparatus, we will be able to create a more active interest in the subjects which we are to discuss, because, as I say, the eye has proved itself to be a much better pupil than the ear. (Applause.)

Mr. B. H. Brown, of Oxford: One thought I would like to present to the institute this morning is this—the second speaker brought it out. I believe I have never seen an institute program which did not contain from two to four papers, two by the state speakers and probably one or two local speakers sandwiched in between. We all know that the most instructive part of the institute is the general discussion. It often occurs that by reason of the length of these papers the discussion is crowded entirely out. I have seen programs where there have been ten different papers and as many speakers put upon the progrem for a single session. The second speaker suggested that he thought it would be well to have but one lecture in the forenoon and one lecture in the afternoon session. At our institute this winter we propose to go a little further than that. Mr. L. N. Bonham is president and I am secretary, and we, in conjunction with the executive committee, have had a meeting and propose to devote one entire session of the institute to discussion. We propose to select a topic that will be interesting to all and to have a leader that we know will be able to bring out the strong points, and then we propose to discuss that topic for a half day, and we propose, as nearly as possible, to make it the ideal Farmers' Institute. We will endeavor to get up an ideal program, and by adopting the course which I have suggested, we expect to bring out more general discussion.

Mr. John Begg, Columbus Grove, Ohio: There is another suggestion which I thought ought to be emphasized, and that is the use of local talent. I know I have frequently heard the expression, which has been made to me, and I am sure it is the experience of other state speakers, that the state speakers are sent out to an institute and those in charge of the institute are going to get all out of them they can. This I think is a wrong idea. It is an error. The prime object of an institute meeting is to develop the various qualities among the people of the community and to bring out general discussion on the part of the people living in the locality. You ought to give at least one-half of the time for discussion of topics and papers read by the local talent of the neighborhood, and you should endeavor to develop that home talent and get people to appreciate the talent in your own neighborhood. This thing of always looking for a stranger to come and do you some good is a wrong idea. We ought to appreciate our home talent and make every effort to develop and cultivate it. If we do this, it will add to the attendance more than the popularity of any state speaker who could be sent. I think it should be an object of each institute to get its own local talent to participate in the proceedings. (Applause.)

Mr. Theo. F. Longenecker, Dayton: When we get started in certain directions, we neglect some other questions that have come up. Our friend Mr. Cowden, for instance, asks a question about getting the key to a room. I am not a musician but I have often noticed, that in talking to a person, you instinctively pitch your voice so that he will be able to hear you. If I wanted to speak to Dr. Chamberlain, I would instinctively measure the distance between him and myself, and unconsciously take on a tone of voice which is necessary to make him hear me distinctly. If I turn to the rear part of the room, and I see those gentlemen standing by the door, if I wish to converse with them, I would propably take a tone of voice which would be necessary for me to be understood that distance. This is a simple rule which I have followed, and which I take the liberty of giving here.

President Bradfute: I always find it a good idea to start in rather an ordinary conversational tone until I can adjust my voice to the room in which I am speaking.

We shall have to bring this meeting to a close. I know that you all feel this has been an interesting and profitable session. We have some committees to report before our noon adjournment.

Mr. S. H. Todd, Wakeman, Ohio, then read Report of Committee on Nominations:

Mr. Todd: Mr. Chairman, our report is very brief. Your committee would suggest the name for President of George E. Scott, of Mount Pleasant. For Vice President, John Begg, of Columbus Grove, Ohio.

President Bradfute: Gentlemen, you have heard the report of the committee on nominations. What shall be done with it?

Mr. McCormick: I move that the report of the committee be adopted.

The motion above made was then seconded and carried and the report of the committee on nominations adopted.

President Bradfute: I will now call upon Mr. Miller as Chairman of the Committee on Resolutions. Is that committee ready to report?

Mr. H. P. Miller, Chairman of the Committee on Resolutions, then read the following Report of Committee on Resolutions:

Resolved, That the Central Farmers' Institute heartily commends Hon. J. E. Blackburn, State Dairy and Food Commissioner, for his appointment of a deputy inspector, selected by the dairy interest of the state.

That we demand that the State Dairy and Food Department rigorously enforce the laws in regard to the adulteration of dairy products, maple products, foods and drugs.

That we urge the Seventy-Third General Assembly of Ohio to provide an ample appropriation to enable the State Dairy and Food Department to enforce the pure food laws.

Recognizing that under the present laws of the state, the citizens outside of municipal corporations, have no voice in freeing themselves from the burdens of taxation made necessary by the traffic in intoxicating liquors, we urge upon the legislature at its present session, the passage of a local option law making the county the unit.

Convinced of the justice and feasibility of a law requiring the labeling of all articles of clothing with a statement of their composition, we recommend the passage of such a law.

We renew our demand for a reduction of public salaries wherever they are out of proportion with the earnings of equal ability employed in private enterprises.

We recommend an amendment to the law creating the live stock commission, making the Secretary of the State Board of Agriculture, a member *ex officio.*

We demand a law making a uniform two cent per mile rate upon all railroads of the state.

Endorsing the movement to hold a State Centennial in 1903, we insist that it be held at the city of Columbus.

We endorse the establishment of postal savings banks.

We endorse the efforts of the State Horticultural Society to restrict the spread of the San José scale, and urge our legislators to pass the bill formulated by the Society, and to use their personal influence for the passage of the national law.

H. P. MILLER,
L. P. BAILEY,
GEO. E. SCOTT.

President Bradfute: What shall be done with the report of the Committee on Resolutions?

Mr. J. F. Greene, Erie county: I move that it be adopted as a whole.

Mr. John Begg, Columbus Grove, Ohio: I second the motion.

Mr. J. F. Hickman: I should like to offer an amendment to the first resolution with regard to the Dairy and Food Commissioner, which is as follows:

"We regard the appointment of that matchless expert of the dairy interests, Mr. L. P. Bailey, in keeping with the advancement of the Dairy and Food Department of our State; and

"We respectfully ask that full power and reponsibility for the enforcement of the law pertaining to dairy products be conferred upon this recently appointed deputy to look after and prosecute these special cases.

"Furthermore, we, the producers, individually and collectively, propose to stand by our Dairy and Food Commissioner, Mr. J. E. Blackburn, and our deputy, Mr. L. P. Bailey, so long as they continue the war on goods made in imitation of our farm or our dairy products."

On motion duly seconded, the amendment above offered was adopted.

Mr. F. A. Derthick: I would like also to offer an amendment to the resolution pertaining to the coming Centennial so that it will further provide that it not only be held in the Capital City of the state, but that it be held on the State Fair Grounds.

It was then moved, seconded and carried that the amendment above offered be embodied in the resolution referred to.

Mr. Greene: I now move to adopt the report of the committee on resolutions, amended as it has been by Mr. Hickman and Mr. Derthick.

Mr. Begg, of Columbus Grove: I second Mr. Greene's motion.

The report of the committee on resolutions as above amended was then adopted.

A recess was then taken until 2.30 p. m. of the same day to meet at the Ohio State University and participate in the exercises at the dedication of Townshend Hall.

OHIO STATE UNIVERSITY CHAPEL, COLUMBUS, OHIO,

WEDNESDAY EVENING SESSION, Jan. 12, 1898.

Owing to the protracted exercises incident to the dedication of Townshend Hall, and the delay attending the luncheon and after dinner speaking which followed the dedication, the State Farmers' Institute did not convene in the chapel of the State University until 9 o'clock P. M.

President Bradfute, in calling the Institute to order, said:

Gentlemen, I think we all appreciate the lateness of the hour at which we have met and realize we will have to shorten as much as possible the exercises of the evening. We shall hardly be able to give any time to discussion on any of the questions upon which addresses will be delivered to us tonight. I want to say that the president, at least, highly appreciates the fact that so many of you have stayed by us so manfully and are in attendance tonight.

The first address this evening is to be delivered by one whom you all know, and I am happy to say that the farmers are realizing, perhaps for the first time, that we now have as Secretary of the Agricultural Department at Washington, D. C., and in the person of the Assistant Secretary of Agriculture, gentlemen who come directly from the ranks of farmers. We are all interested in that Department, and that Department is interested in us as it never has been before. I am gratified to be able to present to you one of the members of that Department, the Asssistant Secretary of the United States Agricultural Department at Washington, Col. J. H. Brigham, who will address you on the subject of "The United States Department of Agriculture." (Applause.)

Col. J. H. Brigham, Assistant Secretary United States Department of Agriculture, then spoke as follows:

Mr. President and fellow farmers: I am very glad to have the opportunity of saying a few words to you in regard to the work of our Department. I am sorry that we have not more time at our disposal tonight, but appreciating the situation I will simply enumerate a few things that we propose doing for the farmers and for agriculture.

One of the first things we have attempted to do is to make friends with Congress. We believe that those who make the laws and the appropriations will do more for the agriculturists and for the Department of Agriculture if they feel friendly toward the Department. We found upon taking charge of the affairs that there was not that friendly feeling between the Department and members of Congress that there ought to be. We have tried to cultivate a friendly relation with the powers that be. We have given them everything that they have asked for and that we have had at our command, but we have usually suggested when we thought we had been very kind to them that the time might come when we would ask something for the farmers and that we would expect them to respond liberally. All of them have said that they will do that, and some of them have said that it makes no difference what we ask for, for we shall have it. We did that not for any personal gain or glorification, but for the purpose of getting for the farmers what belongs to them by right if we can. The Secretary and I, as has been suggested, came directly, or nearly so, from the farm. The Secretary was connected for some years with the University of Iowa, but he is also a practical farmer and very much interested in the work. We are trying to perfect the system of crop reporting; that is one of the important works of the Department as we see it. We want to improve it; we are going to do everything we can to improve it. It may take time, and probably will take time, to perfect the system so that it be satisfactory and what it ought to be. We not only want accurate reports from our own country but from every country with which we come in competion in the great markets of the world. We are trying to find new markets for our surplus. We are doing everything in our power to convince the foreign powers that our products are healthful; that they are pure; that they are good; and that they are cheaper than those they are buying from other countries. We have prejudices to overcome. We are crippled somewhat —the people of this country are crippled somewhat—because of the fact that men have undertaken to sell fraudulent goods to the foreign consumer. They have become suspicious of our cheese and of our butter and of other products. We have that difficulty to contend with. The Department of Agriculture is trying to introduce dairy products into those markets, and we believe in future years we shall find ample markets for all our surplus at prices that will bring a good profit to those engaged in that line of farming. The Department is making a vigorous effort to stamp out the diseases in live stock. We have the means of knowing wherever there is an outbreak in any country of the world, and when reports come in, steps are taken at once to protect the people of our country or the stock of our country from being infected by disease. We are doing all we can as a Department to stamp out the diseases that now exist and to discover remedies. We are making a very thorough inspection of all meats that are to be shipped abroad. This is required by law, and it is very important that this work be thoroughly done, because of the fact that there is an effort to find an excuse for excluding the meats of the United States from some foreign countries. It is not because they believe that these meats are not wholesome, but there are other reasons why they would like to exclude them from some countries at this time. I might mention in this connection especially, perhaps, Germany and France, because they believe it is competition that their farmers would hardly be able to meet, and one of the things they try to do well in Germany is to protect their agriculturalists. No country in the world, I think, is doing more for the protection and promotion of agricultural interests than is Germany. We have had some difficulty in securing microscopists for the purpose of doing this work. The demand has been unusual for this kind of service, and our present civil service regulations have somewhat interfered with our being able to supply the wants of those who are engaged in shipping meats. But still we are doing now about all the work that is needed along that line. We expect to find ample markets for the surplus of meats we have to sell in foreign countries.

It is the belief of the Department that the prices of farm products are regulated, or fixed, by what is known as the law of supply and demand. We believe that one of the difficulties with agriculture today, and with the farmer today, is the fact that the price received for some of the products of the farm does not leave anything in the way of profit to the farmer, that in some lines we are producing more than the markets will readily absorb, and we are trying to encourage the diversification of crops. We are hunting the world over for seeds and plants that can be grown in the United States of America with profit, and as those seeds and plants are tested thoroughly by our experiment stations they will be sent out from there to the farmers of the United States. Weare spending considerable money along that line; more than has ever been expended before, and we believe that some very good results will follow. We are very much encouraged by the reports received from our agents who are very energetic and who are now in foreign countries engaged in that work, They are paid their expenses, but no salary, by the Department of Agriculture. There are many professors and other men who desire to go abroad for their own purposes. We have taken advantage of that opportunity to secure these men to act as agents for us in this regard, and we have contributed something toward the expenses of these people and expect in return to get something of great value to the farmers.

We have done a great deal, as you know, to induce the farmers to test the growing of the sugar beet and we are well satisfied with the results. They cannot be grown with profit, perhaps, in every portion of our country, but it seems to have been demonstrated during the past year that they can be grown in certain sections with good profit to the farmers. If we can produce the sugar to supply our own people and save and keep at home the hundred million dollars which heretofore has gone abroad to purchase sugar, we believe it would relieve production in other lines so that there will be more profit in growing corn and wheat, as well as the additional profit that we have in growing sugar beets from which we will produce our own sugar.

These are some of the things we have in mind today for you. It is the purpose of the Department to watch all legislation that especially interests the farmer, and we will be glad of suggestions from any one along that line. If there is a measure pending in Congress like that proposing to irrigate the arid lands of the West, to build great reservoirs and to impound—as they put it out west—the headwaters of the Mississippi river at the expense of the general government, and open up those large tracts of arid lands to cultivation—whenever they attempt such legislation they will find the Department of Agriculture, if sustained by the farmers of the country, opposing it. (Applause.)

The time will come when those lands will be needed and when they are needed there will be private capital to do this work and it will not be necessary to tax the people to build up competitors in their own country. (Renewed applause.) Some of the laws enacted for the protection of agriculture have been disregarded. The officers whose duty it has been to enforce the law have been derelict in the discharge of their duties. The Department, without making much noise about it, without heralding what it has been doing to the world, has been bringing all the pressure to bear that it could bring upon those whose duty it is to execute the law, and we have the promise of the Attorney General and his assistant that the law shall be enforced, that there shall be no compromises where it is possible to secure conviction and punishment. (Cheering.)

Along these lines the Department is laboring earnestly and will labor earnestly to help the farmers. I might spend a great deal of time, if there was time to spend, in elaborating on our work but I have outlined thus briefly what we are trying to do. We have no pet theories. We have no hobbies to ride. The Department has none that I know of. We are going right to work in a straightforward manner trying to do something that will help the farmers. That is our business. That is the purpose for which the Department was created. We know that we are not all wise; we know that we may not be able to accomplish all that we hope to accomplish; but we believe that if the farmers of the country will come to us with their suggestions and will sustain and support us we will be able to accomplish much of it.

We want the farmers to feel that we look to them for advice and counsel and that we are at their service; that we are there to do all we can do in their interests, and all that they can suggest which is within our power to help develop, build up and protect the great agricultural interests of our country, will be done by us. Now I am glad to know that the agriculturists of the country are becoming active in demanding their rights. There was a time, and many of you can remember it, when the Department of Agriculture was an object of ridicule, when it was thought to be merely a side show. One of the great New York papers recently, when the Secretary issued his report with a great many headings, printed all of the headings and it took a column or two of their city paper; the editor said that the Secretary of the Department of Agriculture is really taking his work seriously; he really seems to think that he has something to do.' There is but little of that feeling now. In the city of Washington, coming in contact with the heads of departments and with the public men of our country, I can see that they are beginning to feel and to know that the Department of Agriculture has the most important work to do of any department of the general government. They believe it to be true and they are talking and saying that the time will come very soon when it will be generally recognized that there is more good for the farmers and for the country at large to be obtained through the medium of that Department than any other department of our government.

Now, I appreciate the fact that there are others here to talk to you tonight. I promised to talk but ten or fifteen minutes and I must keep my word. You know under the circumstances no one, and especially the Assistant Secretary of Agriculture, can afford to lie. We want you to come and see us when you come to Washington. We want you all to feel that you are welcome there. Whilst you know that I am something ot a political worker when there is a political campaign on hand and that I fight for what I believe to be right politically, yet I want you to understand that the Department of Agriculture raises no question as to any man's political affiliations or views in the discharge of their official duties, We treat all alike; we do not ask whether they are democrats, republicans, populists or prohibitionists. They are all welcome, and everything that we possess that is loose they can have if they will ask for it. We send to the South, to the East, to the West and to the North anything we have. We are going to distribute some pretty good seeds this year and if any of you want any of them, apply to your congressman and he will supply you; if not, the Department will supply you. We have apportioned to each congressman a certain amount of seeds which forms a part of the first purchases, and the balance we will distribute ourselves if the congressmen don't coax them out of us. We are doing everything in our power to secure and to send out good seed. We discovered in one or two kinds of seed being sent out that there were some which were not what they should be. As soon as we discovered it, we compelled the men who put up the seed, to open their packages and destroy them and throw them away so that they might not be sent out. I presume very few of them have been scattered abroad. We are using every means within our power to see that the seed which is being sent out by the Agricultural Department of the United States is pure, and we think that you can safely use it. We are not advocating, as a Department, the distribution of seed, but so long as it is the law we will try to furnish those who get it with good and pure seed. If there is anything you want in the way of bulletins or other publications or any information which the Department can furnish you don't hesitate to apply and it will be furnished. Again I say, come and see us when you come to Washington. Don't go to Washington and then come back without visiting the Department. You will find a friendly spirit there; you will realize that you are welcome and if you miss it you will feel very sorry if afterwards your neighbors tell you that they have been there and were nicely treated. Come and see us. (Applause.)

President Bradfute: I know that you all have been very much interested in this address. I am glad that we have had Colonel Brigham with us to give us this talk. I was interested particularly in one thing that he said and that was that there were no politics in the Department at Washington. I want to say that the very highest compliment I think that can be paid to the Department at Washington at the present time is that no matter what a man's politics may be I have never heard any man from any political party criticise the present administration of the Agricultural Department at Washington. (Applause.) I do not know of a higher compliment that can be paid to any department in these times. But we must pass to the next subject. Certainly a man who has held the high office of President of the State Board of Agriculture and a man who is today the Secretary of the Ohio Wool Growers' Association, and a man of wide observation and research, ought to know whether there is any value or not in pedigree. I now have the pleasure of introducing to you Mr. W. N. Cowden, of Quaker City, Ohio, who will address you upon the subject "What is Pedigree Worth." (Applause.)

Mr. Cowden: If I should fail to come up to the very high estimate that the president has graciously given of my ability I shall blame him for any failure I may make in that direction.

WHAT IS PEDIGREE WORTH?

By W. N. COWDEN, Quaker City, Ohio.

I take it there is a good deal of false theory and false practice in Ohio on the subject of pedigrees, and this paper is written for the purpose of getting, if we can, the correct value of a pedigree from a common sense standpoint.

On the one hand, there are those who would not buy a breeding animal unless it had a pedigree as long as the moral law, and such buyers pay little attention to the animal itself, but buy the pedigree instead. On the other hand, there are those who care nothing for pedigree, but look only at the animal and buy it. Now both are right and both are wrong. The former is at one extreme and the latter is at the other extreme, and the truth, as often occurs, is somewhere between these extremes.

What is a pedigree? It is simply the life history of an animal and a like history of the ancestors of that animal. That is all a pedigree is; no mystery, no charm, no untold something that makes an animal having it a good one because of the pedigree, or a bad one because it lacks a pedigree. Now if a pedigree is a life history of an animal and its ancestors, it follows that every animal has a pedigree, because every animal has a life history and has had ancestors. Animals are not like Topsy, who "jist growed."

Then every animal is a pedigreed animal, the only difference being that in the case of one the history has been written and in the case of the other it is unwritten. In the one case a record has been kept of all the peculiarities, tendencies, characteristics and performances of the animal. If a horse, his birth, color and performances in harness or on the race track are noted; if a cow, her description, number of calves, how many pounds of milk or butter, or how many pounds of beef she and each of her ancestors made, are all recorded; if a sheep, how many pounds of wool shorn each year and the clip of the ancestors, etc., are given in each case back to a given point, which is usually with us the time of the original importation; if a hog, and the value of a pedigree is nowhere more closely shown, the size of each family of pigs is recorded and we can know almost absolutely when we select from a given family, whether the mother will bear four or five pigs or twelve or fifteen.

In the case of the other animal, no one thought it worth while to make a record of it; usually because it did nothing worthy of record; and if perchance some speed was developed, or some beef properties began to show, or if a good flow of milk or a large per cent. of butter was shown, or a heavy fleece of wool was given, as often occurs among unpedigreed animals, the next generation returns to the original standard, and the owner, in his disgust, is the first one to forget the former good performances. I do not wish to be understood as saying that all unpedigreed animals are worthless, even as breeders. Through carelessness, or by mistake many thoroughbred animals are not recorded, and such animals, for all practical purposes, are just as valuable as the recorded. The trouble is that in the case of the unrecorded animal, we have no means of knowing that it is thoroughbred, and we must wait for two or three generations to be sure it has the fixedness of type of the thoroughbred, and life is too short for such waiting. I am often amused at those men who say they would not give one cent for a pedigree. Just try to buy the first choice of their breeding stock; they will quickly tell you, "Why, I have been all my life, by careful selection, good care and good feed, building up my herd or flock and now if I sell all the best to you, I sell all I have gained so far in life, and I am too old to begin again. No, sir, I would just as soon sell my wife or some of the children." Such a man is unconciously building up a recorded herd and is just doing what others in the different lines of domestic stock have done and put on record. This is just what Bates and Colins of England, and the Renicks of Ohio did for shorthorns; and what Dickinson and Hammond did for sheep; and what others did in the different kinds of domestic animals, and this is all they did and all that has been done by the combined labor and skill of all the breeders of all kinds of stock.

It must not be inferred, however, that all pedigreed animals are good ones. There are *pedigrees* and *pedigrees*. Your speaker caught the Jersey fever some years ago (we generally catch it from our wives, who want just one Jersey to color the butter or make it solid, you know). Well, I caught the fever and I went to a friend to buy a Jersey cow. I asked the price of one that filled my ideal of a Jersey; he said, "I will not sell you that cow at any price." I asked, "Why?" He said, "You want a good cow and that one is not as good as that old muley scrub." I then learned that a pedigree might belong to a poor animal as well as a good one.

I think the time has come when a pedigree ought to mean that the animal possessing it is not only a thoroughbred, but that the animal is a good one, as well. The different Registry Associations should require not only a straight line of breeding back far enough to eliminate all the original blood, but also require that the animal before being admitted to registry should come up to a given scale of points. There is nothing impractical in such requirement. For instance, an animal of a beef breed should have the beef form and be of a given weight at a given age. An animal of milk breed should show the milk points, have the milk form and have a mother who gave not less than a certain specified number of pounds of milk or butter per week or per year. If the animal be a hog, it should show first, fecundity in both sire and dam, as this is an important consideration with the swine breeder, and also show the ability to digest and assimilate large amounts of food. If a sheep, the fleece should weigh not less than a given number of pounds, or grade up to a certain fineness, or the carcass should attain a certain weight at a given age. Such rules adopted by the different Registry Associations would weed out the unworthy from all the associations and give enhanced value to the animals that pass to registry.

If I have correctly estimated the value of a pedigree in this paper, three deductions certainly follow. First, no breeder can afford *to sell his best breeding stock.* Second, no breeder, no matter what his object may be in breeding, can afford to use any male animal not thoroughbred or pure blood, no matter how good or how cheap he may be. Third, crossbreeding cannot be safely followed further than the first cross.

I have now defined what a pedigree is. The next question is, why is a pedigree valuable? In what does its value consist?

The value of a breeding animal does not consist altogether in what you can see in the animal, but largely in what you cannot see, in that long line of ancestors from which it has descended and whose hereditary characteristics and tendencies have been so fixed by a long line of breeding that with a reasonable degree of certainty you know just what the produce of a given animal will be. Such an animal, we say, is prepotent, not only because the great law of the beginning in which "everything shall bring forth after its kind" holds good in its case, but that other more exclusive law of " like produces like" is almost absolutely the rule in the breeding of the animal.

I believe I have now answered the question from my stand point, "What is pedigree worth?"

You will notice that, in the case of a pedigreed animal, I have said that like almost absolutely produced like. It is in the exceptions to this rule that the improvement of our stock is possible, for if like always produced like every animal would be just like every other animal. These exceptions, if in a good direction, we call good "sports" and if in a wrong direction we call them monstrosities.

My subject has now led me to a point where its further consideration leads to a discussion of the laws of heredity, reversion and environment, the three great factors that modify and control the value of all pedigrees. I cannot enter this field, but indulge me while I give a few examples illustrating the force of each of these great laws.

There is in my county a family of dun horses owned by a man who has a large family of boys. As each boy married and went to a new home, he received a dun filly or fillies, and each one is certain to produce, no matter about the sire, a dun colt and is a striking example of the power of heredity. In a family of shorthorns, bred by your speaker, there was a certain white spot, the size of a nickel, on the left shoulder of each animal of the family, and this spot persisted in appearing in the out-cross as long as the family was kept, and is another example of the force of the law of heredity. Take an example of the law of reversion. When your speaker first became a breeder of Poland China hogs, from five per cent. to ten per cent. of each family of pigs were curly, after one of the original breeds used in the cross. By discarding the curly pigs as breeders, the percentage constantly became less, until I have not seen a curly pig for ten years. Here is the law of reversion carried out by care, skill and intelligence. Some wonderful results, beneficent and curious, have been secured by the operation and combination of these laws. The New York Medical Journal recently gave an account of an experimenter who, in ninety-six generations, succeeded in breeding the tails off white mice. He cut the tails off the first pair and thus succeeded in getting tailless mice. In these examples is the hint as to how Messenger, Maud S , Rarus, Patchen and other noted horses were produced; and how the Rose of Sharon and the Crookshanks among Shorthorns were produced; and how little Wrinkley and Hammonds sweepstakes are produced, and why the descendants of these animals have sold and still sell at such long prices.

I think I have also indicated another thing, that these long prices are not fictitious, but represent real value. Two of the noted race horses of the past year, though purchased for a long price two years ago, each earned in prizes during the year more than the purchase price.

You will not suffer me to leave this subject without a reference to the highest order of animals. Men and women have pedigrees as well as domestic animals, and are subject to the same laws of heredity, reversion and environment. The September number of the New York Medical Journal gives some striking examples under each of these laws. This Journal refers to the inherited intellect of Aristotle, Gœthe, Darwin, Coleridge, and Milton, and might have referred to the Adamses and Beechers of our own country. The Rothchilds in all their money making and pecuniary planning have each shown the result of heredity. Every mental and material drop of the Rothchilds' blood dances to the jingle of coin. The same Journal gives an account of the Bach family of Germany, who were noted musicians. The family began in 1550 and lasted two hundred years, and each member was a noted musician and singer in a church choir; the family produced twenty-nine eminent composers of music. Moral character is also hereditary. G. P. Putnam and Son publish a work written by R. L. Dugdale, of New York, in which the character of a single abandoned girl is traced through seven generations. In these generations the woman, Margaret Juke, sometimes called the "mother of criminals," bequeathed to the world twelve hundred descendants; a record of seven hundred and nine has been given by Mr. Dugdale. He finds that harlotry averages two per cent. among the women in general and twenty-nine per cent. among the Jukes. Crime among her descendants was thirty times greater than among the community in general. Twenty-four per cent. of her descendants were illegitimate; there were seven times as many paupers among the women and nine times as many paupers among the men as among the community in general. Mr. Dugdale estimates that in seventy-five years her descendants had cost the state of New York one million two hundred and fifty thousand dollars in prosecuting the criminals and keeping the paupers.

Let us recollect that these hereditary tendencies in our domestic animals are largely controlled by skill, feed and environment, and that the same tendencies in the human family do not *fix*, but only *give a trend* to our character, which education, society and all good influences can and do control.

At the conclusion of Mr. Cowden's address, President Bradfute said:

I know you all wish you had time to discuss this subject, but we have not the time at our disposal tonight.

We have been talking and listening all day to subjects along educational lines, particularly with reference to the farmer, and we have still some of it before us. There is no question that is more interesting to the farmers, especially those who are situated a considerable distance from towns, than the question of the centralization of rural schools. We will now hear that subject discussed by a gentleman who has had a good deal to do with educational matters both as a teacher and as an examiner. I now have the pleasure of introducing to you Mr. J. F. Greene, of Sandusky, Ohio, who will address us upon the question of "Centralization of Rural Schools. Is it Practicable and Best"?

CENTRALIZATION OF RURAL SCHOOLS. IS IT PRACTICABLE AND BEST?

By J. F. GREENE, Sandusky, O.

The foundation of our common school system was laid broad and deep. The founders of the Northwest Territory incorporated into its fundamental law—the ordinance of 1787, in the third section—these words: "Religion, morality and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall be forever encouraged." They recognized the fact that the safety, best interests and perpetuity of the government depend upon the moral intelligence of the masses; that the boy of today is to be the sovereign of tomorrow.

The same, broad, patriotic, educational idea was engrafted into Ohio's state constitution, and, later, by statutory enactments, provision was made for the establishment and liberal maintenance of our free common schools, high schools and universities. The ideal education was to begin in the primary grades, extend through the city, village and township high schools and culminate in the agricultural, classical, scientific or other courses of the state universities.

These different grades, as a whole, form the common school system of Ohio. How to make this lofty, broad, ideal education the *real* one for the masses is a subject worthy of the best thought and effort of the patriotic, public-spirited citizen of today. That we are not measuring up to this high standard is evidenced by the fact that ninety per cent. of our youth receive all of their school education in the lower grades, which, under present conditions in our rural schools is neither thorough nor complete, a large percentage of children leaving before they have advanced to the grammar grades, while only nine per cent. enter the high schools and one per cent. our colleges.

Far be it from me to minify the grand work done in the past and that is being done at present in the country schools of Ohio. The electrical touch of these "colleges of the people" has been felt for uncomputable good in every community and has placed Ohio far to the front in the general intelligence of her people. The "little red school house upon the hill" has been, and is, our glory and pride, for from it have come some of our greatest statesmen, soldiers and men of letters, and it has made it possible for every boy and girl to receive an education that would fit them for the practical duties of life and make them intelligent citizens of the commonwealth. At the same time we are not blind to the defects existing today in the system of education established by the founders of our state government, defects made more observable by the changed conditions of our rural population, and by comparison of the ungraded schools in the country districts with the much more efficient, graded schools in our towns and cities. I believe that there are few township boards of education in Ohio that are satisfied that we are getting the best results from our country district schools.

We are now reaching the condition in our population existing in the New England states thirty years ago, that of decimated numbers of pupils in the rural schools. We will not stop to discuss the causes, but the fact confronts us that in most of the township schools of the state, there has been a large decrease of attendance of pupils, so that many schools that formerly had an enrollment of from twenty to fifty, now contain but from three to twelve pupils, and, in such schools, the per capita cost is from twenty-five dollars to one hundred dollars per year. In those schools that contain a sufficient number of pupils to make the cost economical so far as numbers are concerned, there are often as many classes as there are pupils and the recitations are, necessarily, hurriedly conducted, often in five or ten minutes each. The average wages offered and paid the country school teacher are not sufficient to hold the experienced ones in the work and, in most cases, young and inexperienced teachers are employed, the trained and most valuable ones finding higher remuneration and better appreciated labor in some other vocation. No well-planned work or system of promotion is inaugurated and carried out in these schools and the bright, progressive pupil has no incentive to best effort, while the dull one becomes discouraged. For lack of associates of their own age, the older pupils are discontented and leave school at a time when, of all others, they should remain. Very few of the schools are properly equipped or furnished with suitable libraries, and few have township supervision. The township high school, generally speaking, is conspicuous by its absence.

We have amended school laws that provide for correcting some of these defects, but the farmers of Ohio are not availing themselves of their wise provisions.

Other defects can only be remedied by a radical change in the entire plan and management of the rural schools. Centralization of these schools into a central building and, by means of transportation provided at public expense, bringing the pupils from every part of the township to this central building is the plan proposed.

This plan is not now an original one, but has been in successful operation, in some of the New England states, for nearly thirty years. I am convinced that whenever and wherever practicable in a township, it will give to such schools the same advantages and efficiency as are found in the best graded schools in our cities and, at the same time, will lessen the cost per capita and largely increase the attendance. The authority to appropriate and expend money for the conveyance of pupils to and from school was obtained, in Massachusetts by act of the legislature, as early as the year 1869. The annual report of the Board of Education for 1894-5, in speaking of the act says: "The object of the law was to favor the establishment of better equipped. better supported and better taught schools, without, however, necessarily increasing their cost. This could be done by the consolidation of scattered and feeble schools, the maintenance of fewer but better buildings and the hiring of a smaller number of higher grade teachers. The growth of the transportation expenditure is largely the measure of the extent to which consolidation is carried. In 1889, the amount paid for transportation was twenty-two thousand, one hundred and eighteen dollars and thirty-eight cents, and year by year, as centralization has been affected, the amount has increased, until the past year the sum of seventy-six thousand, six hundred and eight dollars and twenty-nine cents was expended.

The report states that in reply to a circular letter sent out to these towns asking the question: 'Do you favor the consolidation of small schools and the conveyance of pupils when necessary?' the replies were nearly all in the affirmative. The reasons given were as follows: 'Increase in the size of schools, rendering it possible to have better classification, better attendance, because the school is more interesting and profitable, and pupils can ride in comfort and safety when weather conditions would be unfavorable for walking, and the saving of money by closing small schools, making it possible to employ better teachers.' It is also maintained that the contact with a larger number of pupils excites a healthy emulation and that the small district school does not bring the pupils into touch with the conditions of life which they must meet later. Concord, Massachusetts, a town of four thousand inhabitants, situated twenty miles northwest of Boston, is generally regarded as the pioneer in this movement. The results in Concord were carefully observed by educators in Massachusetts, found to be good, and made known throughout the state by the agents of the State Board of Education. For many years prior to 1880, the common schools of Concord were twelve in number, occupying eleven school buildings, five of which were in the village and the rest ranging from one and one-half miles to three miles from the center of the town. In 1880, after a vigorous and well directed agitation, an appropriation was secured and a modern eight-roomed school house was built at the center to receive the pupils from the village schools. The superintendent of Concord schools, in his annual report, says: 'An immediate and inevitable improvement in every quality that distinguishes a good from a poor school resulted.' The School Committee then turned its attention to the outlying districts. These schools had for a long time been growing feebler and more expensive to maintain in proportion to the number of pupils they served. The new central 'Emerson' school was sufficiently large to accommodate all the children, and, taking advantage of the transportation law, they began to close one after another of these small schools, bringing the pupils in by nice, covered coaches, till now, after some years of patient labor, the whole territory, once requiring the maintenance of twelve schools, has been centralized into the one modern, well equipped Emerson building at the center of the township. At first a strong and rational conservatism existed in the districts. The idea of consolidation was novel and raised doubts and objections that could not be met by past experience here or elsewhere. There was no compulsion used, however, but by degrees each district became convinced of the advantages and benefits to be gained, and petitioned to be taken in. The percentage of attendance of the children conveyed is greater than of those living in the village and is far higher than it was in the old districts. The cost of transportation is about fifty dollars per week, while it is estimated that it would require at least seventy-five dollars per week to maintain schools in the old buildings. All the parents of the town have an equal interest in the welfare of the central system, and for many years dissensions about the maintenance of schools have been unknown in our town meetings. Many families have come to live in the town because of its educational advantages. The farms that come upon the market find readier sale than ever before. The children from the farming districts are no longer distinguishable from the village children by a certain awkwardness of manner or address. The moral tone of the school yard has been wonderfully elevated.

The parents feel and appreciate these incidental but vastly important advantages and are convinced that the system is superior to the one it has displaced."

This plan was first introduced into Ohio about five years ago in a few of the northeastern counties of the state, under a special act of the legislature authorizing township boards of education to use school money for transportation to a central building in a township. Hon. E. J. Clapp had the honor of introducing the bill that became a law. Since then it has been extended to seven or eight counties with marked success. I herewith present the testimony from the clerks of the Boards of Education in some of the districts where this plan has been tried.

TRUMBULL, O.

Trumbull, Ashtabula Co., has in the past year consolidated five districts, having a total of eighty pupils, bringing them to a central school by means of four wagons. These conveyances have from four to seven miles per day to cover, and cost the board from one dollar to one dollar and forty-four cents per day. Under the new system the attendance has increased over twenty-three per cent., and Mr. Goodell, the Township Clerk writes us that "It is conceded by nearly all who send to school that they have been worth more than double what they were under the old system." A year ago one district paid twenty-five dollars per month for a teacher, with an average of three pupils, this year there has been an average attendance from that district of eight scholars.

THOMPSON, O.

Hon. E. J. Clapp writes us that the schools there have been consolidated "with perfectly satisfactory results." He says: "In centralization we need fewer teachers and can employ better ones. Life is too short to put time and money into a school when you have as many different grades as there are pupils. If I wanted to see how much public money I could spend and get nothing in return I would continue the old style district schools."

KINGSVILLE, O.

Has abolished five district schools, conveying the pupils to a central school near the center of the township, by means of covered coaches. Before this system of conveyance could be put in operation, a special act of legislature providing for the use of school funds in that manner, was obtained. The contracts for carrying pupils are let to the lowest bidder. Those who get the contracts must furnish conveyances built according to certain rules. They are capable of being entirely closed in stormy weather, and are to be provided with plenty of warm blankets and cushioned seats. Each coach seats twenty-five scholars and perfect order and discipline is maintained by the driver. A gong is rung as the coach approaches a scholar's door, and he must come and get in at once or be left. In the past four years only one pupil, in the four districts using coaches, has been tardy. The scholars are delivered at the school building, seldom earlier than fifteen minutes before school opens, and never later than that hour, and are called for within ten minutes of the close of the day's session.

The attendance has increased in the sub-districts in all cases, and in some from fifty to one hundred and fifty per cent. The routes traversed by the coaches vary in length, but cost of any does not exceed ninety-five cents per day. As a result of the new system, the expense of education has been reduced from twenty-two dollars and seventy-five cents per capita to twelve dollars and twenty-five cents, and in three years it is estimated that one thousand dollars has been saved the taxpayers. Previously seven teachers were required, now only five. Now that the system has been tried, not a member of the board will agree to again adopt the old methods. The scholars are delighted and seem to fully appreciate a graded school, and it is noticeable that there is little sickness among them. The method of carrying them, saves many a hard cold, which they otherwise would have, tramping through the deep snow on cold mornings to an ill-ventilated, ill-heated, district school house.

WINDSOR, O.

The Windsor, O., Clerk of Schools writes, while they have not been operating under the new plan long, all are well satisfied with the change, and the Clerk of the Board of Education writes: "We like the system and every one seems pleased The advantages gained are so much greater than under the old way, and at comparatively the same cost."

Near the close of the last session of the legislature an amendment to the Workman Law was introduced and passed by one branch of the legislature, authorizing every township school board in the State to use school money for transportation of pupils to a central building. Owing to adjournment it failed to come to a hearing in the other branch of the legislature. I believe the present legislature will enact such a law. The State Grange, at its late session, endorsed and recommended centralization of rural schools when practicable, and I believe it wise for this State Farmers' Institute and the State Agricultural Convention, to meet on the morrow, to commend it.

The practicability of this plan in different localities will depend upon the condition of the roads, the condition and value of the district school houses, the geographical or topographical condition of the township, and, more particularly, the intelligence and progressive spirit of the board of education. It is a radical change and not applicable, nor best, under certain conditions, in a township. Under favorable conditions many townships could adopt the plan and thus secure its great advantages to the schools of those townships. The conservatism of the farming communities will be slow to adopt it, but it is sure to come and I believe it the best solution of the problem offered; the best answer to the vexing question that confronts us; "How can we make more efficient the rural schools?"

Briefly summarized, some of the arguments in its favor are:

1. By centralization we bring together all the pupils of the township and get the inspiration that always comes from numbers and healthy rivalry in classes.

2. We have, under this plan, enough pupils to form good, strong classes thoroughly graded, regular promotions, with plenty of time for recitations and a specified amount of work planned and finished in a certain time.

3. We have fewer teachers, can employ better ones, those of experience and success; paying them good wages.

4. We have thorough work, with all the valuable time of the pupil utilized to the best advantage from the primary grades to the end of the high school courses.

5. We largely increase the attendance, thus educating the masses and giving to all the children of the township the better and higher educational advantages at home, where the moral and home training can be given by the parents.

6. The children are conveyed to and from school in covered, comfortable vehicles, no colds nor sickness from wet feet and garments.

7. Centralization means promptness in attendance and very little absence, and promptness is fixed in the habits and character of the child.

8. Better heated, better equipped and cared for buildings and one good library, accessible to all.

9. Free mail delivery each day, gathered at the school building and taken home by the pupils at night.

10. It increases the value of the farm and farm home life, by bringing to the home that which the boy, otherwise, goes to the city to secure.

11. It brings into the school the masses and, therefore, more fully carries out the intent of the free public school system; assuring the perpetuity of the American Republic by the intellectual and moral development of the future sovereigns of the nation.

Last. The cost of supporting this plan will be much less, after once established, than that under the old method of single schools, scattered in different parts of the township.

At the conclusion of Mr. Greene's address, Mr. H. P. Miller, of Sunbury, offered a resolution in regard to the Workman Law, and to centralization of public schools, which, after being amended by Mr. J. F. Greene, was adopted unanimously.

Following is the resolution as adopted.

In view of the great progress made in the schools of Ohio under the Workman Law,

Resolved, That we are opposed to its repeal, or to any amendment looking towards a return to the sub-district plan.

Resolved, That where practicable, we recommend centralization of rural schools, and we ask the present legislature to so amend the Workman Law, as to allow any township board in the State, when it so desires, to use school money to pay for transportation of pupils to and from a central school building.

President O. E. Bradfute: This closes the State Farmer's Institute for the year 1898, and as your presiding officer I want to thank you for the large attendance at these meetings and for the excellent order which you have preserved and the promptness with which you have all responded when called upon.

Dr. W. I. Chamberlain, Hudson, Ohio. Before we adjourn I move that a vote of thanks be extended to our Chairman, Mr. O. E. Bradfute, for the able and impartial manner in which he has presided over our deliberations.

The motion, being seconded, was put to the Convention by Dr. Chamberlain and unanimously adopted.

The State Farmer's Institute for 1898 then adjourned *sine die*.

PROCEEDINGS

OF THE

Thirty-Sixth Annual Session

OF

The Ohio Wool Growers' Association,

HELD AT

Columbus, Ohio, January 12, 1898.

The meeting of the Ohio Wool Growers' Association was held in the rooms of the State Board of Agriculture at 1 P. M., on Wednesday, January 12, 1898. It was one of the largest meetings ever held by the Association.

At the meeting the following officers were elected: President, William Lawrence, Bellefontaine; Vice President, J. W. Cale, Lore City, Guernsey county; Secretary, W. N. Cowden, Quaker City, Guernsey county; Treasurer, A. H. Kling, Marion; Executive Committee, R. D. Williamson, Xenia; W. H. Crawford, Roscoe; C. S. Chapman, Marysville.

On motion of Mr. Chapman a committee of three was appointed to report resolutions, consisting of C. S. Chapman, J. W. Lewis and Mr. McPeek.

The committee reported the following, which were unanimously adopted:

We, the wool growers of Ohio in annual convention, send greeting to all the wool growers of all the states of the Union, and ask their hearty coöperation with us and promise the same to them in securing for this and all other agricultural and industrial interests such continued and increased rates of protective duties as may be deserved. And in defense of and for the federation of our industry would present for your consideration the following:

WHEREAS, The prices of American wool in the Eastern markets of the United States during the year 1897 have been about three cents per unwashed pound less than the import prices of similar wools, showing that combinations exist to fix prices below the real value; and, WHEREAS, On December 17, 1897, representatives of wool manufacturers in Ohio and six adjacent states, assembled in Columbus to agree on modes of purchasing wools, evidently showing a purpose to coöperate with other combinations to keep prices below real value; and,

WHEREAS, Justice requires that wool growers should receive the fair value of their wool; therefore, be it

Resolved, That the president of the National Wool Growers' Association is requested to call a meeting of said Association at some convenient time, with a view to adopting measures to secure to wool growers the just value of their wool, and for this purpose we recommend that arrangements be made by which wool growers and local wool dealers can ship their wools to some principal wool market, where advances of money can be made thereon and where it can be held for sale at prices equal to its value, and in this we invite the coöperation and combination of all the wool growers, local wool dealers and wool growers' associations in the United States.

WHEREAS, The Ohio Wool Growers' Association has often resolved in favor of the organization in the Ohio State University of a department for instruction in textile industries, and at its meeting in September, 1897, again resolved in favor of the same; and,

WHEREAS, On the 10th of January, 1898, a memorial on behalf of this Association in favor of such a department was presented in the house of representatives at Columbus, and was ordered to be printed, but no order was made requiring it to be incorporated in the appendix to the journal of the house or other legislative document, so that it can be permanently preserved as a public document; and,

WHEREAS, Under section 58 of the Revised Statutes, either branch of the General Assembly may by resolution direct that said memorial be incorporated in the appendix to the journal of either house; therefore, be it

Resolved, That the secretary of this Association is directed to apply to either the Senate or House to order said memorial to be so incorporated, and the Secretary of the State Board of Agriculture is requested to incorporate the same in the annual report of said Board.

Resolved, That we request our representatives to aid us, and the State Board of Agriculture to offer premiums for the best fleeces of wool of the different breeds of sheep, said premium, to be only large enough to cover value of said fleeces and proper packages or coverings to preserve same, to be placed with committee appointed by the State Board of Agriculture; all said fleeces to belong to the state, to be shown at expositions or before any agricultural society in the United States deemed proper; also to compel all breeders or competitors for premiums on sheep to produce fleece taken from sheep the year shown for premium, and number of days said fleeces were grown, and to produce breeding of each, so as to be placed on file for the benefit of breeders of our country to examine, except breeders, outside of the United States, of the mutton breeds. In this way our growers will get information as to cross-bred wools and the breeding of the different classes of wool that our manufacturers need and want, as both manufacturers and growers must work together to make success. We are not a competitor of the manufacturers, but a producer for them, the same as they are for the consumer of goods. Reciprocity must commence at home. If we preach we must practice. We ask for a committee to be appointed to draft resolutions on this line. Then there can be a register commenced and kept of the breeding and wool growing from this time forward.

We recommend that the Wool Growers' Association of Ohio appoint a committee of three to confer with the State Board of Agriculture when it revises the premium list for 1898, and present to it the resolution regarding premiums on different classes of wool as produced in Ohio.

Resolved, by the Ohio State Wool Growers' Association in convention assembled, That we tender our president, Judge William Lawrence, and our secretary,

W. N. Cowden, our most hearty and heartfelt thanks for their able, untiring and persistent efforts, "amidst intense opposition," in securing to the wool growers of the United States that measure of protection which we now enjoy.

Believing in the justice and feasibility of a law requiring the labeling of all articles of clothing with statement of their composition, we urge the enactment of such a law.

As *evidence* of the statement in the resolutions that:

"The prices of American wool in the Eastern markets of the United States during the year 1897 have been about three cents per unwashed pound less than the import prices of similar wools, showing that combinations exist to *fix prices below the real* value."

The President of the Association presented the following taken from the September, 1897, wool circular of Justice, Bateman & Co., of Philadelphia:

Table of comparison of 19 grades of American wool with prices in the summer of 1892 and at this date, showing in the right hand column that an average advance of about 18 per cent. must still take place before prices for domestic wool reach the equivalent of the present cost of foreign wool of the same kind and quality if imported under the Dingley tariff act.	Parity of imported wool August 30, 1897	Prices September 1, 1897.	The amount of advance that must still take place on each grade of domestic before prices reach the parity of fresh importations of foreign imported at this time under the Dingley tariff act.
Ohio XX washed	29	26	3
Ohio medium washed	33	27	6
Ohio coarse washed (¼ blood)	32½	27	5½
Ohio fine unwashed	20½	18½	2
Michigan and New York X washed	25	21	4
Indiana and Missouri fine unwashed	19¼	17	2¼
Indiana and Missouri medium unwashed (½ blood)	25¼	21½	3¾
Indiana and Missouri coarse unwashed (¼ blood)	24¾	23½	1¼
Nevada, Utah, Oregon and Montana heavy fine, shrink 73 per ct	15½	13	2½
Texas, Utah, Oregon and Montana average fine, shrink 70 per ct	17	14½	2½
Texas, Utah, Oregon and Montana fine medium shrink 65 per ct	18	16	2
Texas, Utah, Oregon and Montana low medium, shrink 60 per ct	20	16½	3½
Ohio XX scoured	63	56½	6½
Ohio medium scoured	55	45	10
Ohio ¼ blood scoured	43	36	7
Nevada, Utah, Oregon and Montana fine scoured	57	48	9
Texas, Utah, Oregon and Montana fine medium scoured	52	45	7
Texas, Utah, Oregon and Montana low medium scoured	50	41	9
Texas, Utah, Oregon and Montana coarse scoured	40	35	5
Average	33.6	28.8	4.8

Prices now average nearly 50 per cent. higher than those current in the summer of 1896, and must advance on an average about 18 per cent. to reach prices current in August, 1892, when foreign prices and the tariff were the same as now."

This shows, in fact, that the average prices of domestic wools have been *4.8 cents per pound less than the real value.*

The resolutions were discussed by J. W. Cale, J. W. Lewis, C. S. Chapman and others.

Mr. Cale, in an excellent speech, demonstrated the ruinous effect of the so-called "skirting clause" in the Wool Tariff schedule of the present low, inadequate wool duties in the Dingley law.

A resolution was unanimously adopted expressing gratitude to Judge Lawrence and Secretary Cowden for their untiring efforts in behalf of the wool growers of the state. The resolutions recommended the offering of prizes by the State Board of Agriculture for best fleeces of wool of the various grades, and the appointment of a committee to confer with the Board in such list and prizes. The president appointed C. S. Chapman, J. L. Lewis and J. E. Howe as that committee.

SYNOPSIS OF PRESIDENT'S ADDRESS.

I. THE WOOL TARIFF OF 1867 ADEQUATE FOR CONDITIONS THEN EXISTING.
II. THE WOOL TARIFF OF 1883 NOT SUFFICIENT.
III. THE WOOL TARIFF ACT OF 1890 NOT SUFFICIENT.
IV. THE RUIN OF FREE WOOL.
V. THE DINGLEY WOOL TARIFF OF 1897. ITS BENEFITS.

1. *It has increased the price of sheep.*
2. *It has added an average of about four cents per unwashed pound to average American merino—NO MORE.*
3. *FIVE causes now operating to keep up the price of wools, four of which will soon disappear, and leave the price of wool so low as to render its production unprofitable, unless the wool tariff be improved.*

VI. THE DINGLEY WOOL SCHEDULE. ITS DEFECTS.

1. *It does not meet the changed conditions requiring higher duties than in 1890*
2. *Its rates of duty less protective than those in the act of 1890.*
3. *It admits goat hair free—unlike the McKinley act of 1890—to be used as a fraudulent wool adulterant.*
4. *It admits wool on the skin at one cent per pound less than other wool—unlike the McKinley act.*
5. *The duty on shoddy and noils is too low—less than in the McKinley act.*
6. *The duty on rags is too low.*
7. *The duty on second class wool is too low.*
8. *It has in it the ruinous "skirting clause."*
9. *It admits sheepskins and calfskins free of duty.*
10. *It admits cattle and calf hair free, used as wool adulterants.*
11. *The duty on imported sheep is too low.*
12. *There should be a duty on Peruvian tree cotton.*

VII. A GROSS FALLACY EXPOSED.

1. *The difference between "tariff rate" and "protective benefit."*
2. *The Dingley wool tariff gives protection less than 20 per cent. ad valorem—only about one-third the protection given to manufacturers.*

VIII. IF THE WOOL TARIFF SHALL NOT BE IMPROVED BY THE NEXT CONGRESS—WHAT THEN?

ANNUAL ADDRESS OF THE PRESIDENT,

HON. WILLIAM LAWRENCE, of Bellefontaine, Ohio.

GENTLEMEN OF THE OHIO WOOL GROWERS' ASSOCIATION: The people of the United States are deeply interested in sheep husbandry. A brief review of wool tariff legislation may interest the people of Ohio.

I. THE WOOL TARIFF OF 1867 BENEFICIAL.

The wool industry of the United States presents remarkable changes, resulting from (1) tariff legislation, (2) the increase in the world's flocks, (3) changes in modes of manufacturing, and (4) financial conditions. The wool tariff act of March 2, 1867, gave protection to the industry sufficient to give it prosperity with conditions then existing if they had continued.

Under it the prices of wool were fairly remunerative. See Tariff Hearings, House Committee on Ways and Means, January, 1897, page 1447. Sheep increased from 28,477,951 in 1870, producing 100,102,387 pounds of wool, to 50,626,626 in 1884, producing 308,000,000 pounds. In four years, from January, 1880, to January, 1884, sheep increased in number 24 per cent.

II. THE WOOL TARIFF ACT OF 1883 NOT ADEQUATE.

Then unfortunately came the tariff act of March 3, 1883, reducing wool duties. Under it sheep declined in number from 50,626,626 in 1884, with a wool clip of 308,000,000 pounds, to only 43,431,136 in 1891, producing 285,000,000 pounds. The wool duties of this law were more protective under conditions then existing than is the Dingley law now.

III. THE WOOL TARIFF ACT OF OCTOBER 1, 1890, NOT ADEQUATE.

In view of the injury resulting from the reduction of the wool industry by the act of 1883, the tariff act of October 1, 1890, known as "the McKinley law," increased the duties on wool, and American flocks slowly grew in numbers to 47,273,553 in 1893, producing 348,538,183 pounds of wool.

A wool tariff can only be adequate which will within a reasonable time increase our wool product sufficiently to supply all American needs. American wool growers can supply all needed wools of all kinds. U. S. Senate Mis. Doc. 35, 53d Congress, 2d Session, January, 1894, page 23; Senate Doc. 36, 55th Congress, 1st Session, April, 1897, page 10. We need now in the United States 110,000,000 sheep for this purpose, producing 650,000,000 unwashed pounds annually. See Boston Monthly Bulletin of the National Wool Growers' Association, October, 1897, page 37.

Under the wool tariff act of 1890 the increase of sheep and of wool produced did not keep even pace with the increase of population, as shown by the following statistics:

Year.	Population.	Number of sheep per 100 of population.	Wool product, pounds.
1890	62,622,250	71	276,000,000
1894	68 275,000	66	298,057.384
1895	69 753.000	61	309,748,000

The McKinley law was a failure. because of (1) "loopholes" for fraud in it, and (2) reductions in duties made in the bill after McKinley introduced it, especially the *ad valorem* duties on third class wools. (3) The "skirting clause" was a fatal defect in the law. See bulletin of the National Wool Growers' Association, January, 1898, page 16; Wool Tariff Hearings, Committee on Ways and Means, January, 1897, pages 1364 and 2172. U. S. Senate Doc. 36, 55th Congress, 1st Session, April, 1897.

Hon. Geo. H. Wallace has shown that the act of 1890 afforded no real protection to wool. Tariff Hearings, January, 1897, page 1605.

IV. THE RUIN OF FREE WOOL.

With the result of the election of 1892 came the certainty of free wool, subsequently enacted in the Wilson-Gorman tariff act of August 28, 1894.

The following table shows the ruinous effect of this act resulting in a loss to flock owners of $178,793,121, with items thus:

Year, January 1.	Number of sheep.	Value.	Loss on value of sheep.
1892	44,938,365	$116,121,270	
1893	47,273 553	125,909 264	
1894	45,048,017	89,186,110	$36.723,154
1895	42,294,064	66,685,767	22,500,343
1896	36,464,405	61,989 488	4,696,279
Total			$63,919.776

Year.	Number pounds wool.	Farm value.	Loss on wool.
1892	333,018,405	$47,185,283	
1893	348,538,138	23,164.040	$24,021,243
1894	325,210,712	22.122,528	25,062 755
1895	294,296,726	23,543,738	23.641.545
1896	270,474,708	20,800,000	26,385,283
Total			$99,110,826

The wool product for 1892, 1893 and 1894 is based on estimates as given by eminent wool merchants in North's Wool Book for 1895. The secretary of the National Association of Wool Manufacturers says the average farm value of wool in 1896 "did not exceed eight cents a pound," reducing the total value to $20,800,000, (See bulletin of the Association, September, 1896, page 214.)

The increase in number of sheep in 1893 over 1892 was 2,335,188. If the increase had continued at the same rate until now the number would be 7,005,564, which, at $2.25 per head, would be $15,762,519. Thus the total loss (1) in value of sheep, (2) farm value of wool, and (3) in number and value of sheep would be $178,793,121. See U. S. Senate Doc. 17, 54th Congress, 2d Session, December, 1896 page 176.

V. THE DINGLEY WOOL TARIFF—ITS BENEFITS.

The so-called "Dingley tariff act" became a law July 24, 1897. In view of (1) the large imports of wool for some months preceding it, and (2) the brief space of time since, it is not possible yet to forecast fully its effect. But it is better than free wool. Among its benefits are the following:

1. There has been an increase in the price per head of sheep in different states with an average of about forty per cent.

2. It has added an average of about four cents per unwashed pound to average American merino wool over the normal world's price, and no more. (See wool tariff hearings before the House Committee on Ways and Means, January 6, 1898, pages 1365, 1375; "Bulletin of the National Wool Growers' Association," September, 1897, page 32.)

The price of wool has advanced an average of about fifty per cent. from October, 1896, to October, 1897.

The New York Wool Record gives New York quotations on standard Ohio fleeces (washed) as follows:

Year.	Fine wool per pound (cents).	Medium per pound (cents).	Coarse per pound (cents).
1889	35	39	32
1890	33	37	29
1896	17	18	17
1897	21½	23½	21

These are for *good* grades. The farm value was about three cents per pound less. The wools of the far west states, unwashed, with greater shrinkage in scouring, and otherwise of less value, were *considerably less in price.*

3. There are FIVE CAUSES now operating to increase the price:

(1.) Free wool reduced the number of sheep in the United States from 44,938,365 in 1892 to 36,464,405 in 1896, a reduction of 7,473,960. Reliable estimates make the reduction 10,500,000. Added to this was a loss of about 30,000,000 out of the 114,000,000 sheep in Australasia by the eight months' unparalleled drouth of 1896. Sheep will be soon restored to more than the original number.

(2.) The prices under free wool were below the *normal world's prices*, and some increase of price was inevitable, even if there had been no wool tariff.

In 1895 and 1896 the free wool act of 1894 depressed wool manufacturing industries, and so reduced the price of wool below the world's normal price

As a consequence the exports of domestic wools in the fiscal year 1895 were 4,279,109 pounds, and, including foreign wools, were 12,972,217, and in 1896 domestic wool, 5,271,535 pounds, and, including foreign, 8,700,598 pounds, seeking the better foreign price.—Wool Manufacturers' Bulletin, December, 1897, p. 390.

The September Bulletin, page 245, said:

> "There are special causes at work just at present which make temporarily for higher values in the world's wool markets than have prevailed recently, or are likely to prevail in the near future."

This admission is important as coming from the secretary of the Wool Manufacturers' National Association, and it proves the necessity for making the Dingley wool schedule more protective.

Theodore Justice, in a letter January 27, 1897, said:

> "In my judgment, before another presidential election Port Philip (Australian merino) will fall six cents per pound"—Boston Wool Growers' Bulletin, December, 1897, p. 18; Bulletin, January, 1898, p. 18; U. S. Senate Doc. 36, 55th Congress, 1st session, April, 1897, p. 153.

(3.) A portion of the decline of price in 1895 and 1896 grew out of the financial panic of 1893, the depression in all industries, the inability of the people to buy.

(4.) The holders of the large imports of wool, in advance of the "Dingley act," have been booming the price since the new tariff.

(5.) And the tariff as stated.

Here, then, are some causes now operating to keep up the present prices of wools, *which will soon disappear, and wools will go to lower prices* unless the Dingley wool schedule be improved.

VI. DEFECTS IN THE DINGLEY WOOL TARIFF—TWELVE.

The Dingley wool schedule is (1) utterly inadequate as a protective measure; (2) unjust to wool growers, and (3) does not fulfil the promise of the Republican platform of 1896 of "the most ample protection."

The best friends of protection for all our industries, are those who point out defects in the law with a view to remedying them. "The wise man forseeth the storm."

The act of Congress of October 1, 1890, was known as "the McKinley law"; that of August 27, 1894, as "the Wilson law"; that of July 24, 1897, is designated as "the Dingley law."

The duties provided in the wool and woolen schedule of each are thus stated:

Articles.	Dingley law.	Wilson law.	McKinley law.
Wools, unwashed, of the first class	11c. lb.	Free	11c. lb.
Wools and hair of the second class, washed or unwashed	12c. lb.	Free	12c. lb.
Wools of the third class and camel's hair of the third class, valued at twelve cents or less	4c. lb.	Free	32 p. c.
Wools of the third class and camel's hair of the third class, valued above twelve cents	7c. lb.	Free	50 p. c.
The duty on wools on the skin shall be one cent less per pound than is imposed on other wools of the same class.—Dingley law		same as	other wool
Top waste slubbing waste, roving waste ring waste and garneted waste	30c. lb.	Free	30c. lb.
Shoddy	25c. lb.	15c. lb.	30c. lb.
Noils, wool extract, yarn waste, thread waste, and all waste wholly or part of wool not provided for	20c. lb.	Free	30c. lb.
Woolen rags, mungo and flocks	10c. lb.	Free	10c. lb
Goat hair	Free	Free	12c. lb.

The Dingley law admits cattle hair, calf hair, goat hair, except Angora, free.

The acts of 1890 and 1897 imposed double duty on washed first class wools, and treble duty on scoured first and second classes.

To readers unfamiliar with the subject, this is not very intelligible. Merino wool is "first class," the long wool of the mutton breeds is "second class," and the coarse, common wool is "third class."

DEFECTS IN THE DINGLEY ACT—TWELVE ENUMERATED.

Among the defects in the Dingley wool schedule are the following:

1. It does not meet the changed conditions requiring higher duties than under the act of 1890.

The nominal rates of duty on the first and second class wools in the acts of 1890 and 1897 are the same; but the general effect of the new law is to give *much less protection* to wool growers than the act of 1890, (1) because of the change of conditions since that year; and (2) because of other provisions in the new law which reduce its protective benefit.

The constant *decline in the world's prices* of wools since 1882 requires higher duties now than then, or even since 1890. Thus the London selling value of a bale of Australian wool in 1882 was £18, and in 1896 the value was £11½. Here is a decline of £7½ during the past fifteen years. £11½ is the lowest point reached during the past seventeen years.

It having been demonstrated that under the wool tariff of 1890 sheep did *not increase as fast as population*, and so was *a failure*, the Dingley law with *less protection* will be a worse failure, and the evidence of Theodore Justice and of S. N. D. North, above given, is that in the near future wool prices will go yet lower.

2. The rates of duty in the Dingley law are less protective than those of the act of 1890.

The new law reduces duties on sundry forms of wool and wool adulterants below those of the act of 1890, as follows:

Articles.	Duties.	
	Act of '90.	Act of '97.
Shoddy	30 cents lb.	25 cents.
Certain wool wastes	30 cents lb.	20 cents.
All goat hair, largely used in making cheap carpets and some other manufactures	12 cents lb.	All free except Angora goat hair
Wools on the skin	Same as other wools.	One cent per pound less.

3. The specific duty on third class wools is *apparently* better in the Dingley law than the *ad valorem* duties in the McKinley act. But the apparent benefit is deceptive—a deceptive fraud. It is much lower even than the swindling *ad valorem* duties of the act of 1890.

(1.) The act of 1890 imposed double duty on all "sorted wools." The Dingley act admits "sorted" third class wools without any increase of duty. See Boston Bulletin, National Wool Growers' Association, November, 1897, page 15. The result will be that the finest, lightest, best portions of third class fleeces will be "sorted" out and imported, and used in the manufacture of woolen and worsted goods suitable for clothing; thus (1) supplanting our American merino and long wools and crossbred wools, and (2) reducing the price of all wools.

(2.) The other portions of third class fleeces, practically of no value, will be imported at a price so low for carpet manufacturing as to render American carpet wools, and the skirts of American wools used in making carpets, of but little value. Senate Doc. 17, 54th Congress, 2d Session, December, 1896, pages 28, 120, 156.

(3.) The protective benefit of the duty of four cents will be in effect less than two cents, and this is ruinous to our wool industry. In the fiscal years 1892, 1893 and 1895, the imports of these coarse wools were 368,245,971 pounds, equal in clean wool on merino to 736,491,942 pounds, while the imports of all other wools—merino and long wools of the mutton breeds—were only 207,739,283 pounds. Nearly *one-half of all the coarse wool is used in making clothing goods* and upholstered goods, and the residue in making carpets. The low duty on the mighty avalanches of those wools will be ruinous to our wool industry.—Wool Growers' Bulletin, October, 1897, p. 22; U. S. Senate Doc. No. 36, 55th Cong., 2d session, p. 43; Wool Tariff Hearings, page 1404; see corrected statistics third class wools, Wool Growers' Bulletin, March, 1898, page 168.

When McKinley introduced his bill in 1890, he proposed a *duty of eight cents* per pound on the better grades of these wools. The rate asked for by the wool growers in the act of 1897 was eight cents on all, double on washed and treble on scoured.

The result under the Dingly law low duty will be that wools can be imported in a scoured condition, containing ten or twelve per cent. of dirt and other foreign substances, clean enough to be manufactured, at a cost of three cents less when scoured clean than if imported unwashed, so that the carpet manufacturer, on a basis of London prices, secures his scoured wool at three cents per pound less than if he imported it in the grease, to say nothing of the saving of fifty per cent. of his former ocean transportation.

THEODORE JUSTICE'S OPINION.

Theodore Justice, an eminent wool dealer and importer, who was influential in getting these low, inadequate duties in the new law, said in an interview published in the Philadelphia "Inquirer" of July 21, 1897:

> "Carpet manufacturers, under this act, will be able to import their wools scoured clean at three cents per pound less than if the wool growers had succeeded in their demand that duties on scoured wool should be three times those applied to unwashed wool. Under the Dingley act third class wools will come here cleaner than under any other tariff law, which will be a great gain to carpet manufacturers."—Wool Growers' Bulletin, September, 1897, p. 33; same, November, 1897, page 21; same, November, 1897, page 19.

(4.) Third class wools may not all be imported sorted. But even then the worst feature of the new law is the low duty it imposes on what are called "third class" wools--the common coarse wools. The duty is four cents on wools valued at twelve cents, or less, and seven cents if over that value, all admitted scoured at this rate, unless containing not more than eight per cent. of dirt, when the duty is trebled. The imports will nearly all be at four cents scoured, at an average import price of about eight cents per pound. But each pound will be so clean as to be equal to clean wool of at least two and one-half pounds of average American merino, shrinking in scouring sixty-seven per cent.

(5.) The "sorted" wool will, to a large extent, be admitted at the low duty of four cents. Theodore Justice has said that "when there are two rates, one higher, one lower, the wool will generally come in at the lower." Senate Doc. 36, 55th Congress, 1st Session, April, 1897, pages 57–61.

The duty while *nominally specific*, is in practical effect *ad valorem*, with all the attendant frauds of that system.—Wool Tariff Hearings, 1412 as to the fraud under a "dividing line."

The fact that the best "sorts" of "sorted" third class wools are permitted to be imported without additional duty, is only *one* of the ruinous features of the law. Worse yet, the law permits third class wools to be imported without additional duty, not only washed but practically scoured. Paragraph 354 imposes double duty on washed wools of the first class, and treble duty on scoured wools of the first and second classes. Then as to wools of the third class it provides:

> "The duty on wools of the third class which * * * shall not contain more than eight per cent. of dirt or other foreign substance shall be three times the duty to which they would otherwise be subject."

In other words, third class wools may be imported scoured so clean as to contain only eight per cent. of grease without any additional duty. Such wools are "in condition for use in carding or spinning into yarns."

Good qualities of unwashed third class wools will shrink in scouring an average of 30 per cent., other varieties will shrink still more. See United States Senate Doc. No. 36, 55th Congress, 1st Session, 43, 70, April, 1897.

The wool circular of J. L. Bowes & Bros., Liverpool, January 8, 1898, quotes the third class wools unwashed:

Thibet, good, per pound	11¾	cents.
Cordova, average, per pound	9½	"
Candahar, average, per pound	8½	"
Average price, say	10	"

This will be imported "skirted," clean, "ready for manufacture" at a duty of four cents per pound, only equal to a duty of less than two cents per pound in competition, with average unwashed American merino shrinking 66 per cent. in scouring. A duty of two cents is only 20 per cent. *ad valorem* on the average price of ten cents. As this wool will (1) supplant Merino and Down long wools and (2) reduce the price, the nominal duty on these wools will be thus practically largely reduced. See United States Senate Doc. No. 36, 55th Congress, 1st Session, p. 43, April, 1897; Wool Tariff Hearings, House Committee on Ways and Means, January, 1897, pp. 1393, 1404, 1408, 1426, 2190: United States Senate Doc. No. 17, 54th Congress, 1st Session, December, 1895, pp. 9, 48, 54, 145.

Other quotations of washed third class wools at higher prices are given in the Wool Circular and Documents above referred to.

A comparison of the prices given in the Circular of wools of classes one, two and three shows that good grades of class three are about equal in value with the wools of classes one and two, as follows:

WOOLS, CLASS ONE.

	Price, cents.
Port Philip unwashed, average	.17
New Zealand unwashed, average	.14½
Montevideo unwashed, average	.13

WOOLS, CLASS TWO.

English	.19

WOOLS, CLASS THREE.

Vicaneer, white	.17½
Joria, 1st, white	.19½
Donskoi, washed	.14½

These are specimens. When the third class wools will be "sorted" for American market, the best "sorts" will be imported at seven cents duty, each pound having as much clean wool as more than two pounds average unwashed American Merino, thus reducing the protective benefit to it to less than three cents per pound, only about 12 per cent. The "sorts" will be more valuable than American Down long wools, and with lighter shrinkage than American, the protective benefit to the latter will not reach four cents per pound, equal to an *ad valorem* protection of less than 16 per cent. This can scarcely be said to be any protection at all; it is less than low revenue duties, a sham and a fraud on wool growers. As a result of this low duty on third class wools the imports for the five months, August to December inclusive, 1897, were:

	Imports, pounds.	Per cent. of all.
First class wools	5,449.181	13 4-10
Second class wools	274,297	7-10
Third class wools	34,991,826	85 9-10

This shows how third class wools supplant our merino.

Under free wool in the same five months of 1896, the imports were:

	Pounds.	Per cent. of all.
First class	20 365,180	38 9-10
Second class	3 827,193	7 3-10
Third class	28,219,753	53 3.10

See Justice, Bateman & Co. Wool Circular, February 1, 1898.

And yet the wool circular erroneously and absurdly speaks of these third class wools as "such as we do not largely produce and such as compete the least with our own production." The fact is these wools injure American wool growers more than any other. Senate Doc. 36, 55th Congress, 1st Session, April, 1897, page 47.

3. The McKinley act put a duty of twelve cents per pound upon goat hair, largely used as a fraudulent adulterant with wool in making cheap carpets. The new law admits all goat hair free, except Angora mohair—a very valuable fiber—and the law is so ingeniously worded that the importers will claim that all mohair on the skin shall come in free.—Wool Growers' Bulletin, January, 1898, p. 12; December, 1897, p. 20. The Treasury Decision 18,834, January 19, 1898, holds mohair on Angora skins dutiable. Wool Manufacturers' Bulletin, March, 1898, p. 72.

4. The McKinley act imposed the same duty on wool on the skin as on other wool. The new law reduces the duty one cent. This is ingeniously put in to admit imports of the millions of sheep slaughtered in Australia to save the wool and pelts, as the sheep there were, in 1896, perishing from the eight months' drought.

SHODDY, RAGS, ETC.

5. Shoddy, etc.—The McKinley act of 1890 imposed a duty of thirty cents a pound on shoddy, noils and wastes, yet some were imported. The new law reduces the duty to twenty cents, evidently to aid imports. Every pound of shoddy is equal to three pounds of average unwashed merino wool, which shrinks sixty-seven per cent. in scouring.—Wool Growers' Bulletin, December, 1897, pp. 20, 21. As to mungo, see Bulletin, December, 1897, p. 20.

6. The duty of ten cents per pound on woolen rags is too low. It is so drawn as to admit woolen yarn in knit goods, made and cut for the purpose, "worth more than new scoured wool."—U. S. Senate Doc. No. 36, 55th Congress, 1st session, April, 1897, p. 146. Here is a wide loophole for fraud. So also is there a loophole for fraud in admitting what are called "broken tops" at a duty of twenty cents. They are worth more than scoured wool. The McKinley act of 1890 imposed thirty cents a pound duty on special "wool wastes." The new law reduces the duty to twenty cents. This will admit millions of pounds at low duty to injure wool growers.

7. The duty on second class wool is too low. The law permits second class wools to be imported, washed, at a nominal duty of twelve cents per pound. When washed they will be so nearly clean that a pound will yield more clean wool than two pounds of average unwashed American wool. Thus the nominal duty of twelve cents only gives a protective benefit to merino, in competition with it of six cents. That this is wholly inadequate for the second class wools, and is ruinous to merino, which includes ninety per cent. of all the wools grown in the United States, is self-evident. The wool growers' bill proposed twelve cents duty, double on washed, treble on scoured. But the manufacturing and importing influence in Congress defeated our request.—See U. S. Senate Doc. No. 17, 54th Congress, 2d session, December, 1896, pp. 67, 118; Senate Doc. 36, 55th Congress, 1st session, p. 141; Wool Tariff Hearings, House Committee on Ways and Means, January, 1897; p. 1402.

8. The Dingley law has in it the ruinous "skirting clause." "Skirting" consists in cutting out the center, best, lightest, finest part of a fleece, leaving the less valuable parts of the fleece, called the "skirts."

DIFFERENCE BETWEEN "TARIFF RATE" AND "PROTECTIVE BENEFIT."

(1.) The center part is imported. By reason of this there is under this law, unfortunately, a wide difference between the "tariff rate" and the "protective benefit." The nominal duty on merino wool of eleven cents per pound will in practice give a "protective benefit," or increased price of only about four cents per pound on average merino wool, in competition with such light shrinking, skirted, Australasian merino as will be imported for two reasons:

SKIRTING FRADULENTLY PRACTISED.

First, "skirting," as it will be fraudulently practised to an extent to evade the law, will give the imported part of the fleece an average value of four cents per pound over that of the whole fleece, thus by so much reducing the protection of the tariff rate; and

Second, such Australasian merino as will, in imports, fix prices and protective benefit, has a peculiarity almost unknown to any other merino wool. It will, skirted and unwashed, shrink in scouring only about fifty per cent. or less, while our American and other average merinos will shrink sixty-seven per cent. Thus the Australasian, by light shrinkage, has an advantage of three cents per pound, which by so much reduces the protective benefit, and with four cents advantage by skirting, leaves hence only four cents protective benefit. The evidence is clear.

1. Mauger & Avery, eminent New York wool importers, have shown that in July, 1893, when the New York price of Ohio, washed merino was twenty-four cents per pound, and Australasian good average grease, unwashed, in London was eighteen cents, the protective benefit to washed American merino was only six cents, and hence to average unwashed only about four cents. See evidence, U. S. Senate Doc. No. 17, 54th Congress, 1st session, December 10, 1895, p. 48; and see Wool Growers' Bulletin, December, 1897, p. 6.

There is much of the Australasian merino that will shrink more than fifty per cent. in scouring, but it commands less price; the lighter shrinking wool fixes the American price.

In a letter published in the Michigan "Farmer," June 26, 1897, Theodore Justice, a wool dealer, said:

> "In my judgment if the duty was to be eight cents on wools with the skirts on to make it the equivalent of eleven cents, with the skirts off there should be only one single duty of eleven cents."

Since the act of October 1, 1890, wool growers all over the country have protested against the "skirting clause," but their protests have been of no avail.

This concedes that "skirting" takes three cents from the protective benefit—in fact it takes four cents.

3. The Weekly New York "Tribune," February 17, 1897, said:

> "The skirting clause (of the act of 1890) was made the means of defeating the plain object of the law to a large extent."

4. Governor Rich, of Michigan, in a speech at the World's Columbian Exposition at Chicago proved the same.—See U. S. Senate Mis. Doc. No. 35; Wool Growers' Bulletin, December, 1897, p. 6.

When the wool manufacturers forced the "skirting clause" on the act of 1890, Hon. Columbus Delano, then president of the National Wool Growers' Association, withdrew from a conference with them in utter disgust. Wool Tariff Hearings, January, 1898, p. 1606.

(2.) The skirting clause is unjust to American wool sorters, whom it deprives of a million dollars a year given to foreign wool sorters.—Wool Tariff Hearings, January, 1897, p. 1368. As to "skirting" see decision of Secretary of Treasury, No. 19,079, March 12, 1898; Bulletin National Association of Wool Manufacturers, March, 1898, p. 56; *In re* Higgins, 55th Federal Reports, 278. These define "skirting" and "sorting." See wool tariff speech, Senator Lee Mantle, in Senate, June 4, 1897, which refers to Lawrence's argument, etc.

(3.) A leading paper, referring to the loopholes in the law, said:

> "Low duties on wools are made to sound high. It is framed to yield the least return to sheep raisers without being understood by those who read it. High duties are made to sound low in the wool manufacturers' schedule, to be understood only by those who have a direct interest in it."

EDWARD A. GREENE'S WORDS.

(4.) Edward A. Greene, of Philadelphia, the eminent wool manufacturer, wool dealer and wool expert, who was chairman of the commission that arranged the wool samples under the act of 1890, says:

> "The Dingley law is better for the manufacturers than any law they ever had, but worse for the wool growers than any (except the Wilson law) since 1867."—Wool Growers' Bulletin, November, 1897, p. 23.

This presents the truth of history, *fiat justitia ruat coelum.*

Hon. C. H. Grosvenor, in a speech March 29, 1897, in Congress, on the tariff bill then pending, described the general effect of the wool and woolen goods schedule, by saying:

> "If there is one article manufactured in New England that will not receive tariff protection far above any *ad valorem* rates on wool, I do not know what that article is."

The law as enacted is no better than the bill he was discussing, and in his speech at the Toledo (Ohio) Republican State Convention, he said of the new wool tariff:

> "That the duty on wool * * * is yet not so startling in its demands and figures as to array against the wool schedule the entire anti-protection forces of the United States."

It is certainly true that the "anti-protection forces" should be satisfied with the low duties on wool. The same can not be said of the tariff on wool manufactures.

The inquiry may be made, Why the wool manufacturers secured more ample protection than wool growers?

Theodore Justice in a letter published in the "Michigan Farmer" has shown how wool manufacturers have political influence, with a capacity to contribute campaign funds, and thus exert an influence which isolated wool growers can not.

The "Boston Commercial Bulletin," when the tariff bill was pending, boasted of New England ascendency in the senate. Its issue of May 22, 1897, said:

> "The finance committee of the Senate is Senator Aldrich. The other members are either too infirm for work or absolutely under the domination of the strong willed man from Rhode Island."

I have never encouraged sectional prejudice, but when New England boasts of her domination, the whole country should combine to resent it.

9. The Dingley law admits sheepskins, goatskins, and calfskins free of duty. This is unjust to American wool growers and stock raisers.—Wool Growers' Bulletin, December, 1897, p. 30.

10. It admits cattle and calf hair free. These should be dutiable, because they are used as wool adulterants; (1) to the injury of wool growers, (2) to the injury of American cattle raisers, and (3) to defraud consumers. Senate Doc. 36, 55th Congress, 1st session, April, 1897, p. 147.

11. The duty on imported sheep is too low. Mutton sheep are being imported in large numbers from Canada.—Wool Growers' Bulletin, December, 1897, page 17. Why should we permit any to be imported?

12. There should be a duty on Peruvian tree cotton, otherwise called "vegetable wool."—See U. S. Senate Mis. Doc. No. 35. 53d Congress, 2d session, January, 1895, p. 93; Senate Doc. No. 36, 45th Congress, 1st session, April. 1897, p. 156.

It so nearly resembles wool that in manufactures it can only be detected by chemical tests. It supplants American wool and defrauds consumers.

THE DINGLEY LAW A FAILURE AS TO WOOL.

The inadequacy of the Dingley law is proved by its results thus far.

1. *As to wool prices*: The present prices of wools with all the causes now *temporarily* operating to keep them up, do not give fair remuneration to wool growers.

The December, 1897, Bulletin, of the National Association of Wool Manufacturers gives statistics of the wool product of the United States as follows:

Number of sheep, April 1, 1897.	Wool washed and unwashed. Pounds.	Scoured—pounds.
34,784,387	259,153,251	111,365,987

This shows a decline in numbers of sheep and wool product since January 1, 1896. But wool growers anticipated large benefits from the "Dingley act," and the increase with lambs since April, 1897, has been great, though statistics are not yet attainable. The prospective increase next year is still greater.

2. As to increase of sheep: On January 1, 1898, the following *twenty-one* states report less sheep on hand than on January 1, 1897:

New Hampshire, Massachusetts, Connecticut, New Jersey, Pennsylvania, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, Tennessee, West Virginia, Kentucky, Illinois, Missouri and Utah.

A GROSS FALLACY EXPOSED—AD VALOREM PROTECTION FOR WOOL.

The advocates of low duties mislead many wool growers and others by stating the *ad valorem* protection given to wool, as if the nominal duty gave a protective benefit equal to its specified rate.

When it is seen that the nominal duty on merino wool of 11 cents per pound is in effect only four cents, that the nominal duty of 12 cents on washed second class wools gives to such wool at most not over eight cents, and indirectly to merino less than half that measure of protection, and that the duty on third class wools is in a large measure nullified by the "sorting" feature of the law, the *ad valorem* benefit of the wool tariff will not reach 20 per cent. There are still other defects in the law. See Senate Doc. 36, 55th Congress, 1st session, April, 1897.

VII. IF THE NEXT CONGRESS WILL NOT IMPROVE THE WOOL TARIFF—THEN WHAT?

It has been well said that "the wool tariff is the keystone of the protective arch." In other words, without the votes of the wool growers the general policy of protection cannot be maintained for other industries. This was more than proved in the presidential election of 1896.

The political issues in that year were "protection and sound money" by the republicans; "free silver and free wool" by the democrats.

The republican platform promised "To wool the most ample protection."

There were several states of the mighty interior and west, in which the republicans really favored free silver, but they also favored wool protection. They were thus compelled to choose whether they would vote for McKinley on the promise of wool protection, or Bryan with the ruin of free wool.

McKinley's election was saved by the votes of free silver republicans, who did not love free silver less, but loved wool protection more.

The election returns will be found in United States Senate Document No. 17, 54th Congress, 2d Session, December, 1896, p. 83, and see pages 30, 70, 79, 85, 94, 115, 179.

The vote in the Senate, January 28, 1898, on the Stanley Matthews resolution should admonish the eastern states that something must be done to bind the states of the west to the cause of protection.

WOOL AND THE ELECTION.

It is demonstrated that:

1. A change of 25,000 votes in six states carried in favor of McKinley in the last presidential election by a very small majority, would have resulted in the election of Bryan. Doc. 17, above referred to.

2. A sufficient number of free silver republicans (republicans who favored Bryan's policy of free silver) voted for McKinley because they deemed his promise "most ample protection for wool" more important than free silver.

The conclusion may be drawn from this that if the republicans in Congress fail to give this "most ample protection," a sufficient number of free silver republicans may be unwillingly driven away from the republican party two years hence to elect a free silver majority in the House of Representatives in Washington, and two years hence to elect a free silver candidate for the presidency. For myself I would regret this, but it is well that we should recognize conditions as they are and are to be.

An eminent republican wool dealer of Philadelphia—Theodore Justice—in a letter November 9, 1896, said:

> "The wool growers were tempted by the proposition that Bryan's election meant a premium of fifty per cent. or more upon gold, which would be equivalent to that much tariff protection, as the duties as well as the cost of importing wool would be payable in gold, but they never forgot that Bryan voted for the Wilson bill—free wool."

This kind of protection cannot be evaded, while duty on wool can. A protection of 50 per cent., which cannot be evaded, is worth more than 20 or even 70 per cent. *ad valorem*, which perjury can readily reduce nearly one-half.

It is a singular fact that most of the wool exports from the United States in the fiscal year 1896, went to Mexico— a free silver country.

A dispatch from the City of Mexico, December 2, 1896, says:

> "The Government will stick to the silver standard as being, in the opinion of the administration, the one best adapted to this country and as affording it at the present rate of exchange (fifty per cent.) an immense protection to home industry, while at the same time securing for its exports a gold premium which operates as a bounty to tropical planters."

A letter is just received from a republican, the publisher of one of the most influential papers of Oregon, as follows:

> "Portland, Ore., January 16, 1898.
>
> "Judge William Lawrence
>
> Do you regard bimetallism by international agreement a failure? If so, what course will you advise the republican party to pursue? This state is for free silver, sure.
>
> Truly yours, etc., ———— "

Oregon may be saved to the republican party by "the most ample protection for wool"—not without it.

New England will be blind to her manufacturing interests if she persists in high duties for manufacturers and low duties for wool growers. Hon. George H. Wallace, late Consul General to Melbourne, now Secretary of New Mexico, has shown that the party of protection was defeated in the election of 1892 because of the injustice done to wool growers by the low duties of the act of 1890 for them and the high duties for wool manufacturers. Tariff Hearings, January, 1897, p. 1607. Something more must be done for agriculture. The prices of all farm products are abnormally low. Agriculture, the greatest of all our industries, is not having prosperity equally with the manufacturing industry. I sound the alarm; if the cry of the farmers be not heard, or be disregarded, I will share no responsibility for conseqnences. I make no threat, I merely predict—warn against imminent danger. For myself, I believe in honest money and ample protection, and I am for these doctrines:

"True as the dial to the sun,
Although it be not shined upon."

Those desiring a full discussion of sheep husbandry and the wool tariff will find it in United States Senate Mis. Docs, Nos. 35, 77 and 124, 53d Congress, 2d Session, 1894; Senate Doc. 17, 54th Congress, 2d Session, December, 1896; Wool Tariff Hearings, 54th Congress, 2d Session, January, 1897.

THE WOOL TARIFF THE WOOL GROWERS ASK FOR.

This will be found in United States Doc. No. 36, 55th Congress, 1st Session, April, 1897, pp. 132-163, with reasons in support of it. It has been indorsed by wool growers' associations, by farmers, and others in every prominent wool growing region of this country. It is supported by more people than any provision of the tariff law.

The Association then adjourned.

PROCEEDINGS

OF THE

Fifth Annual Meeting

OF THE

Ohio State Dairy Association.

Held in the Senate Chamber, Columbus, Thursday Evening, January 13, 1898.

At the fifth annual meeting of the Ohio State Dairy Association, held in the senate chamber, Columbus, on the evening of Thursday, January 13, 1898, the following officers were elected:

President	J. F. Hickman	Wooster.
Vice president	F. A. Derthick	Mantua.
Secretary and treasurer	L. P. Bailey	Tacoma.

DIRECTORS.

J. P. Bradbury	Pomeroy.
E. F. Webster	Wellington.
Harrison Austin	Warren.
George E. Scott	Mt. Pleasant.
E. F. Smith	Columbus.

LEGISLATIVE COMMITTEE.

T. F. Hunt	Columbus.
F. A. Stranahan	Cleveland.
L. P. Bailey	Tacoma.

The following papers were read and discussed:

SOME OF THE DIFFICULTIES IN THE ENFORCEMENT OF THE OLEOMARGARINE LAW.

By HON. J. E. BLACKBURN.

[Delivered at the meeting of the State Dairy Association.]

Just about one year ago I addressed this organization and attempted, as well as I was able, without experience, to outline what was meant for a general policy of the Dairy and Food Department. As I look back on the last twelve months and remember the high path I had outlined for myself leading straight to the goal of success, I am filled with conflicting emotions. I remember having read somewhere about the "sweet girl graduate," dressed in her immaculate white, with her essay beautifully written and tied with a magnificent ribbon, waving her hands to the audience and saying that in the far distant future she could see the invisible footprints of the hand of time, or words to that effect.

I thought, when assuming the duties of Dairy and Food Commissioner, that it would only be necessary to meet the manufacturers and dealers of oleomargarine, explain to them wherein they were violating the law, and I felt sure that the love of fairness, justice and righteousness, that is supposed to pervade every human breast, would lead them to see the error of their way, and I really expected after a few good-natured prosecutions to see the illegal sale of oleo eliminated from the state of Ohio. I did not believe that any one would intentionally, persistently, continuously and deliberately attempt to violate the laws of our state.

I believe that there is less colored oleomargarine sold at present than there has been in the recent past, but that there is colored oleomargarine sold in nearly every large market of the state, is undeniable. After a year's experience in prosecuting and directing prosecutions for the violation of the oleo statute, I feel a little like the man who was kicked across the township by a mule; his friends gathered him up, nursed him back to life, and then asked him what he thought about it. He studied over the question for a minute and then said, "Well boys, I may not be quite as pretty as I was, but I know a heap more."

To attempt to give all the experiences that I have had within the past year and all the remarkable subterfuges, excuses and devices for evading or violating the oleomargarine statute, would take up your entire evening. I shall, therefore, only attempt a brief review of the year's work and mention a few of the failures to convict, with the reasons as I understand them.

When I assumed charge of the office of Dairy and Food Commissioner, I was confronted with three very unfavorable decisions by judges of the Common Pleas Courts in various parts of the State. The first was a decision by one of the judges of the Hamilton county court (Ohio vs. Groenland), holding that in charges of violation of the pure food laws, the affidavit alleging the offense must state not only that the offense committed was a violation and what particular law was violated, but also indicate precisely how the article sold was an adulteration and the extent to which it was adulterated. This has a direct bearing on the oleo question, and I believe, when properly interpreted, means that the State must not only find out what particular coloring matter is used, but must give the exact amount of the adulteration. This is not always an easy thing to do, and a mistake would be fatal to the prosecution. I carried this case to the Supreme Court in the hope of having it reversed, but did not succeed in doing so; the decision was confirmed, thus rendeeing it more difficult to secure testimony in violations of this kind.

The next, and what I believe to be the most important decision bearing upon the oleomargarine litigation, was one made by a Common Pleas judge in Portage county in the case of the State of Ohio vs. John Ruedy, the judge holding that a justice of the peace had no jurisdiction in cases of this kind, and ordering the defendant dismissed. I felt that this decision was wrong and carried it to the Supreme Court with all possible speed, for should this decision be generally recognized as the law of Ohio, convictions would be well nigh impossible, unless the defendants saw fit to plead guilty, which they were not apt to do when they understood this ruling.

The Department refused to accept this view of the law, and prosecuted a considerable number of cases with various degrees of success. The case was argued in the Supreme Court and on December 14, 1897, the following decision was handed down, which I consider entirely satisfactory and iron-clad in favor of the Department. The decision is as follows:

(Supreme Court of Ohio.)

THE STATE OF OHIO v. JOHN RUEDY.

Justice of Peace reversed by Common Pleas—Decision of latter subject of exception to Supreme Court, When—Law of Adulteration of food.

1. A decision of the Court of Common Pleas reversing a sentence by a justice of the peace may be the subject of an exception by the prosecuting attorney for the purpose of presenting it to the Supreme Court to obtain a decision for the government of similar cases.
2. The introduction of coloring matter into oleomargarine, is the adulteration of an article of food punishable by law, and of such offense a justice of the peace has jurisdiction.

(Decided December 14, 1897.)

Exception to a decision of the Common Pleas Court of Portage county.

John Ruedy was tried before a justice of the peace of Portage county, and found guilty of selling oleomargarine which contained coloring matter, and was sentenced by the justice to pay a fine of $50.00 and the costs of prosecution.

He filed a petition in error in the Court of Common Pleas for the reversal of the sentence, and the Court of Common Pleas decided "that the justice had no final jurisdiction to try said defendant for the offense charged in the affidavit, nor to render a final judgment, or assess him with the payment of fine and costs of said proceeding," and reversed the judgment. To that decision of the Court of Common Pleas the prosecuting attorney excepted, and presents his bill of exceptions here, under sections 7305-8, of the Revised Statutes.

D. L. Sleeper, for plaintiff in error.

J. A. Smith and I. T. Siddall, for defendant in error.

By the Court:

A decision of the Common Pleas reversing a sentence imposed by a justice of the peace, may be the subject of an exception by the prosecuting attorney, with a view to presenting it to the Supreme Court to obtain a decision to determine the law to govern in similar cases under sections 7305-8, of the Revised Statutes. Kelly v. The State, 54 Ohio St., 166; State v. Hutchinson, 55 Ohio St., 573; State v. Hutchinson, 56 Ohio St., 82.

Section 3718*a*, of the Revised Statutes, confers upon justices of the peace, jurisdiction "in cases of violation of the laws to prevent adulteration of food and drink, the adulteration and deception in the sale of dairy products, etc." Paragraph b. of section 3, as amended April 22, 1890, (O. L., vol. 87, p. 248,) now section 4200-6, Revised Statutes, provides that an article of food shall be deemed to be adulterated "if it is colored, etc." Since oleomargarine is an article of food, the justice of the peace has jurisdiction.

Exceptions sustained.

As soon as this decision is published in the law bulletin it becomes the legal construction of the law for the guidance of all courts within the state, and ought to facilitate very materially the securing of convictions under violations of this statute where the evidence of violation is complete.

There is one other decision pending in the Supreme Court and I think it, too, was given by a judge of the Common Pleas Court of Hamilton county, and is to the effect that where no pay has been accepted for an adulterated sample, that there is no sale because of no consideration, and consequently, no violation no matter how much the particular sample may have been adulterated. This same question is now being contested in the courts of Pennsylvania and is attracting much attention there.

This is a very important case, and while the Department will spare no effort to have it reversed, I am free to admit that the prospects of attaining this end are not as promising as might be for the reason, that will suggest itself on a little reflection, that while laws may require a dealer to furnish samples and give the inspector authority to go in a store to demand and secure samples, it is manifestly impossible to compel a dealer to accept pay for the sample if, in doing so, he violates the law against the sale of adulterated foods and renders himself liable to prosecution by reason of said sale. I seriously doubt if it would be constitutional or just to compel a man by law to violate a law in forcing him to sell against his will an article believed to be adulterated and then prosecute him for a violation.

Should this decision be sustained in the Supreme Court, it will, of course, be heralded to every dealer in the State and they will be notified under no circumstances to accept pay for samples taken for analysis. This will make it still more difficult to secure convictions, for the charge would then have to be, having adulterated goods in possession with intention of selling, and the State would have to prove the dealer's intention. The dealer could readily go on the stand and testify that he had these in his possession for his own use and the law would be powerless to interfere; or if the dealer was too conscientious to do this, and nearly all of them are, he could refuse to answer the questions as to his intention on the ground that it might incriminate him and avail himself of his constitutional rights not to testify against himself, and the average jury, in many cases, would refuse to find him guilty.

I believe this to be especially true of the larger cities where most, and I might say nearly all, of the oleo is sold. In many cities there is a clearly defined and positive sentiment in favor of the oleo business that renders convictions extremely difficult and in some cases impossible, because if there is any one thing that is stronger than law, it is that vaguely defined, not always understood, and frequently much abused article known as public sentiment.

A few examples as to how this somewhat uncertain element may affect the work of the Department might not be out of place. Early last spring I was informed that there were numerous daily violations of the oleo law in Cleveland. I went there, took several inspectors with me and proceeded in a systematic way to warn every dealer in oleo that we could find against violations of this law, calling attention to its provisions, notifying them to display signs where none were found, and giving every one a reasonable and fair opportunity to comply with the law. I went back with a number of inspectors and in a couple of days succeeded in collecting quite a number of samples that were sold contrary to law, inasmuch as they contained coloring matter. After innumerable delays from various reasons, we at last got a case to trial before a justice in Cleveland. The attorneys and the justice said that they never saw a case more carefully prepared or the facts more clearly proven. In spite of this, the jury promptly decided the defendant not guilty, and the defendant took the jury off to a restaurant to treat them to a banquet and have a good time.

From conversations held with members of the jury we found the alleged reason for acquittal. Some of them said that the inspectors should have bought all of the dealer's stock instead of only buying a pound or two. Others said that they would never render a verdict for the State as long as the State only paid them seventy-five cents a day for jury duty. I brought no more cases in Cleveland, but on all oleo violations in Cleveland have taken them outside of the city, but within the county, and have been generally successful. We have convicted in every case except one where a disagreement was had.

Work in this line, however, has not been as rapid or as satisfactory as I could wish, and the number of complaints made by the Ohio Dairy Union, with headquarters at Cleveland, to the Department, led to the appointment of a State Dairy Inspector, whose sole duty it shall be to look after violations of the State dairy laws with especial reference to violations of the oleo law. He will not have any other business to take his time or require his attention, and with liberal appro priations by the legislature that is now in session, we hope to accomplish more within the next year than has ever been accomplished in one year since the Department was established. Just how results will compare with our hopes and expectations remains to be seen.

We have felt our way along the last year with all the caution and prudence that the complicated state of affairs seemed to require, and I cannot look back now and recall a single instance wherein the Department has done anything to bring the law into disrepute, to array public opinion against the Department, or to give any man or set of men just cause to claim that they have been persecuted or unfairly treated. Our policy has been firm and as considerate as we had any right to be under the law and the circumstances in the case.

It is often a difficult matter to secure twelve men to agree upon a verdict. It is generally impossible to tell the exact sentiments of those who serve as jurors until they are sworn in upon a particular case, as it is easy to so prejudice a juror that he will not consent to a verdict of guilty even when the guilt is clearly proven. This puts the State to material disadvantage, as the defendant only has to have one man on the jury friendly to his business to prevent conviction and put the State to the expense and trouble of another trial, while the State must have all of the jurors at least fair and unbiased, so that the chances of securing convictions might be said to be twelve to one against the State.

Another fact that ought to be considered in this connection is the present law for the payment of jurors. They are only allowed seventy-five cents a day for their services, and even this small sum is not paid unless a verdict is reached. Where the prejudices of one or more jurors prevent finding a verdict, the other jurors who believe the defendant guilty must give in or be deprived of their fees until the case is settled. In some very important cases this has militated against the State and caused the State to lose cases that ought not to have been lost; as but few men have the courage and fortitude to stand out against their fellowmen when it affects their personal welfare from a financial standpoint. This law ought to be changed.

I have attempted to outline a few of the legal difficulties without any reference to the great precaution necessary in securing evidence. It has become our custom to send two inspectors in important cases to take samples. The sample is then placed in the hands of the chemist at the earliest possible moment, and as soon as report is received we are ready to prepare the affidavit and begin prosecution.

The defense never loses an opportunity to pick flaws, real or imaginary, in our testimony and cast doubt upon the genuineness of the sample, and it is a common practice to claim that a mistake has been made, that the sample in court upon which the prosecution is based is not the sample that was sold. In spite of all the difficulties, I feel we have made some material progress; not as much, perhaps, as this organization could wish; possibly not as much as we ourselves could desire, but we feel that we have laid the foundation for a work that is bound to bring good results in the immediate future.

It is well to remember that the abuses against which we are contending have grown step by step for many years, and some of the brightest men and best attorneys are employed in their defense. Backed as they are by large capital, it has been a most difficult matter to present every point to be considered in a way that would carry conviction to the minds of unbiased jurors. Every point is vigorously contested, every question earnestly fought; every device is employed that intellectual experience and ingenuity can suggest to cast doubt, reflection or reproach upon the case as presented by the State or some of the State's witnesses. I hope, however, with the assistance of the Seventy-Third General Assembly, in the way of an appropriation, to be able to present a more favorable report to your Association next year than has been presented for any year's work in the past.

Thanking you for your always kind consideration and soliciting your continued interest and support for the Department, of which I have the honor to be the head, I respectfully ask that you keep in touch with the Department by personal visit, letter or otherwise, and give your influence to the upholding and enforcement of a fair and just law whose only object is to protect the consumer and prevent deception in the sale of valuable food products.

CHEESE LEGISLATION.

By E. F. WEBSTER, Wellington, O.

[Delivered at the meeting of the State Dairy Association.]

In the limited time allotted to me for this paper, I cannot attempt a thorough discussion of the important topic that has been assigned to me. I do not profess to bring to this discussion the scientific knowledge of the chemist, and must be permitted to treat the subject from the practical standpoint of the cheese manufacturer and dealer, and to speak from a purely commercial point of view.

Your attention is called to the undisputed fact that the cheese trade of Ohio is a very valuable one; valuable alike to manufacturer and to dealer, and equally so to the producers of the milk from which the cheese is made. This trade is the result of more than thirty years of thorough application and careful study on the part of cheese makers and of hard, intelligent work on the part of the dealers in establishing it, and is now the basis for the prosperity of a large portion of the dairymen of the state. This important business, now so essential to the highest interests of Ohio dairymen, should not be disturbed by unwise legislation. Our cheese law of 1892, was an absurdity and its repeal gave general satisfaction. The cheese law recently enacted by the legislature of Pennsylvania, has already seriously damaged the cheese trade of that state, and has disgusted the Pennsylvania cheese dealers generally. A prominent cheese dealer of that state writes me as follows: "Our new cheese law is ridiculous and in some features impracticable, and consequently it cannot be fully complied with. Doubtless your legislature will act more intelligently." We should profit by these blunders and serious mistakes of other states and should strive to avoid making mistakes in our cheese law in Ohio.

It is of course admitted that our law should suitably protect both consumers and producers. It should be our object to secure such a law. Our present cheese law is satisfactory, except in one important particular, and your attention will be called to this serious defect later in this paper.

The amount of butter fat in a cheese is by no means the only element of commercial value. If a cheese be not skillfully made and be not properly cured, much of it will be condemned and rejected and sales of it will be limited, whatever might be the result of submitting it to a chemical analysis. The Food Commissioner of Wisconsin, in his latest report, says: "In a considerable percentage of the cities and towns of Wisconsin, it is almost impossible to buy a good piece of cheese." And Wisconsin is generally supposed to be emphatically a full cream cheese state.

The cheese manufacturer and dealer is confronted by two problems: First, what quality, shape and color of cheese is required by the markets to which it must go, and second, what quality, shape and color will enable him to make the best returns to the producers of milk. He must suit his trade, or he cannot retain it, and cannot make such dividends to his patrons as a competent man, under favoring conditions, should be able to do. In order to solve these problems correctly, the demands of the markets and the quality of the cheese with which he must compete must be carefully considered. Every merchant knows that markets differ widely in their demands. Some markets require a Cheddar shape, weighing about sixty pounds; others a flat cheese varying in weight from twenty to forty-five pounds. One market calls for a highly colored cheese, with a belief that color indicates cream;

another requires a light color and still another, a cheese in its natural color, commonly called white. Some jobbers insist upon a strictly full cream cheese, though they generally cannot possibly tell whether cheese is full cream or lightly skimmed, (and only a small portion of the so-called full cream cheese is strictly so), while others prefer a light skimmed article at a little lower price than full creams sell for, and a limited number demand a heavily skimmed cheese at a price corresponding to quality. The cheese manufacturer and dealer cannot disregard these varying demands without seriously crippling his trade, making it impossible for him to secure best obtainable results for his patrons.

As I must speak from personal experience and observation, I may be permitted to state that the firm of which I am a member, formerly Horr, Warner and Company, now the Horr Warner Company, has been engaged in manufacturing cheese and selling it at wholesale for more than thirty years, and I have used our experience as a basis for my conclusions.

When we commenced cheese making we received milk once per day until April 20th of each season, then twice per day until October 20th and again once until November 30th, so that we received milk twice per day during six months of each season and once per day during the remaining two months. Our reasons for receiving milk but once per day during the early and late season were because the flow of milk was light during those portions of the season and the cost of milk hauling was thus reduced, and because the cost of manufacturing was also considerably lessened. Doubtless these reasons have influenced manufacturers of neighboring states to adopt the custom of receiving milk but once per day, which we long ago abandoned as less profitable for the milk producer than our present plan. A prominent merchant in Utica, New York, writes me that the system of receiving milk twice per day in future in that section is now being agitated. If manufacturers would consult their convenience less and the highest interests of their patrons more, the custom of receiving milk twice per day throughout the season would be generally adopted. Receiving milk but once per day gives the patrons of factories manifold opportunities for clandestine skimming and furnishes employment for a corps of assistant commissioners to prevent such fraud.

When we received milk twice per day we made cheese twice per day, the milk being worked up as soon as it was sufficiently cooled both morning and evening. Under this plan there was no possibility of any skimming whatever, and our cheese was just what it was represented to be, namely, strictly full cream. In no other way can strictly full cream cheese be made.

We found that when we began to receive milk twice per day on April 21st of each year there was a sharp, decided increase in our yields. We also found that there was an equally sharp, decided decrease in our yields when we again began to receive milk once per day on October 21st. These changes in yields were invariable. For a time we permitted skimming the cans with a perforated skimmer, but later our rules strictly prohibited this and we exercised due vigilance to prevent it. We at times conducted as many as twenty-four factories, but in our thirty years' experience we have never found a man who could keep up his yield on once a day milk. Our experience and observation convince us that if cream rises upon vat or can the greater portion of the cream that so rises will go off in the whey in the course of manufacture and be lost. Hence, I repeat, that strictly full cream cheese cannot be made unless the milk be received at the factory twice per day and the cheese be made twice per day. On the once a day plan, in many cases, cream will be removed by patrons, and when not so removed, as I have stated, cream that rises on cans must mostly go off in the whey. This conclusion has been reached after many years of careful study of the practical workings of the system, and is abundantly fortified by the experience of expert cheese dealers and by the testimony of manufacturers who find a decided difference between tests of night's and morning's milk, where milk is received but once a day, and can easily be substantiated by an appeal to the chemists for a comparative analysis of strictly full cream cheese and of so-called "full cream cheese" made from milk received but once a day.

As a further corroboration of the foregoing conclusion, I will state that I have in my possession a report of twenty-seven tests of milk made in a Wisconsin full cream cheese factory last Fall by the Assistant Food Commissioner of that state. This report shows that the average test of thirteen days, where morning's and evening's milk were received together at the same factory, was four per cent. The average of fourteen tests of morning's milk was 4.71 per cent. The average of fourteen tests of evening's milk at same factory on same days was 3.33 per cent. It will be observed that the tests of evening's milk at this factory showed one third less cream than morning's milk on same days at same factory. This report was furnished me by a responsible cheese house of Wisconsin and fully corresponds with our own experience and with the testimony of manufacturers and dealers who have given this question careful study.

For many years past we and other manufacturers in Ohio have received milk twice per day from the first day of the season until the last. We permit the night's milk to stand in the vat over night and in the morning remove the small amount of cream that rises and make it into fine creamery butter. The cheese produced from this milk is a lightly skimmed article that pleases the trade and compares favorably in quality with the cheese with which it competes in the markets, and we are enabled to make better returns to our patrons than we could otherwise do.

We have also learned that with the light amount of butter fat removed on our present plan we make a decided gain in another direction. We find that we can produce a better quality of cheese by permitting the night's milk to remain over night in the vat at the factory, so as to ripen more than it could do if made into cheese on the evening it is received. So that, upon our present system, we produce an article that fairly competes with the so-called "full cream" cheese made from once a day milk, we save something for our patrons by making into butter the cream that would otherwise be mostly lost if the cheese were made but once a day, and we produce an article that is in some respects better than it would be if the milk were made into cheese twice per day, so as to be strictly full cream.

We, however, have to compete with cheese made upon a different plan. In Wisconsin and Michigan generally, and in New York to some extent, milk is received at the factory but once per day, the night's milk presumably remaining in the cans over night at the farms. When no cream is removed by the patrons, some cream must rise upon the cans and, as I have described, the most of it must be lost in manufacturing. They lose the cream that so rises, we save it in the form of creamery butter. We Ohio cheese dealers meet this Wisconsin and Michigan cheese in the markets where our cheese is disposed of and, to a lesser extent, New York cheese also. They are our sharpest competitors. Their cheese is branded, as under their laws they have a right to brand it, as full cream, and it is so sold. We cannot so brand our cheese made as above described, nor do we wish to do so. We are, it is true, handicapped somewhat, but our customers have learned to place a proper value upon our goods and in justice to Ohio full cream cheese makers, we are content with our law in this regard. Our law properly provides that only cheese made from full milk can be branded as full cream. This is right and the full cream cheese maker is thus protected, for of course every maker who can legally use the full cream brand does so, and all cheese not bearing the full cream brand in our state is properly supposed to be made from milk that is somewhat skimmed, as the Dairy and Food Commissioner of Michigan states is the case in that state; our law in this regard being similar to the Michigan law and almost precisely like that of New York. I am not aware that either Michigan or New York has a law providing for a brand for skimmed cheese.

A prominent cheese house in Detroit writes me that during the months of October and November many factories in that state receive milk every other day only; that the cheese so produced is about three-fourths skimmed, but that it is branded "full cream," and with cheese so made and so branded, Ohio cheese made as I have described must compete, while the quality is far superior to the Michigan cheese.

For the purpose of showing the standing of Ohio cheese in the markets in which it is sold, I have compared our Wellington billing prices with market prices for same weeks for full cream cheese in Chicago, full cream Wisconsins in the important market of Sheboygan, Wisconsin, and the ruling price for full cream Cheddars in Utica, New York. I find that for thirty-one weeks, from May to December, 1897, Utica full cream Cheddars sold on an average at seventeen one-hundredths of a cent above Wellington flats, while Wellington favorites were billed on an average at one third of a cent per pound higher than Utica full creams. During thirty weeks, Wellington billing price for flats was seventeen one-hundredths of a cent higher than Chicago full cream quotations and Wellington favorites, sixty-seven one-hundredths of a cent higher. During twenty-five weeks of the period named, Wellington flats sold on an average at same price as Sheboygan full creams, and Wellington favorites at one-half cent above Sheboygan. The foregoing statement covers every week during the period named of which I could secure accurate reports. I will state that my firm makes about the same number of favorites as flats, both varieties being of precisely the same quality. The foregoing statement shows that our Wellington cheese sold at a higher price throughout the season than full creams in either of the markets named, and this notwithstanding the fact that the cheeses referred to were branded as full creams while ours were not. I am convinced that Ohio cheese will make an equally good showing, if compared with the sales of Michigan cheese, but I have not been able to get the figures to make the comparison. While I have not the exact figures at hand, I am convinced that other leading Ohio cheese dealers sold at prices equal to ours during the season. This market test is more reliable than any opposing theory can be, and should establish beyond question the fact that no legislation should be attempted that would disturb the trade in Ohio cheese of the class that I have described. This market test is all the more valuable because our Ohio cheese has gone to markets where it has been sold for many years in competition with the so-called full cream cheese from other states, aud to customers who, after thorough trial, prefer our cheese without the full cream brand to the Wisconsin and Michigan cheese with that brand. While the laws in the states named remain as they now are, our law should not be changed, except as hereinafter suggested.

No doubt there is a limited demand for strictly full cream cheese at a price that will warrant its production, but it is equally true that the demand for the sort of cheese I have described is not only well established, but is growing, and, if Ohio cheese makers generally should make a strictly full cream article, the result would be to either compel Ohio dealers to reduce prices so as to injure their patrons, or drive the Ohio trade largely to Wisconsin and Michigan goods.

I have stated that makers of full cream cheese in Ohio are protected by our law, and that makers of the grade of cheese that I have described ask for no change in our law regulating the full cream brand. It is, however, true that in one respect the consumers are not so fully protected as they should be, and that makers of the grade of cheese I have been describing are not protected from inferior goods, and this leads me to call your attention to the defect in our law referred to early in this paper.

Our law provides that, if cheese does not contain at least 10 per cent. of butter fat, it must be branded as "skimmed cheese." The intent of this provision was doubtless good, but it practically serves no good purpose, and its effect is distinctly bad. The percentage named is entirely too low. No manufacturer, who has a good reputation to maintain, would for a moment think of putting upon his order trade an article with the percentage of butter fat anywhere near so low as ten, but unfortunately there are men handling heavily skimmed cheese, who, regardless of their reputation, impose upon the trade to the extent of their ability, with a much poorer article than should be offered to the order trade, and doubtless some consumers buy them under the impression that they are buying an article of about the quality furnished by responsible Ohio dealers generally and so consumers and makers of good cheese suffer.

The only excuse that can be offered for such a low percentage of butter fat as is required by our law to protect from the skimmed cheese brand is the fact that in commercial parlance skimmed cheese is supposed to be a very heavily skimmed article. This probably grew out of a custom that prevailed a few years ago in Pennsylvania, and in some other states where creameries abounded, and where the cream was practically all removed by separator process, and where, instead of returning the milk to be fed by the farmers, as is now generally done, the milk was made up into a very heavily skimmed article which was sold on the markets as "skimmed cheese," and so established the reputation of all cheese bearing that brand.

This, however, is not a sufficient excuse for the extremely low percentage required by our law to protect cheese from the offensive brand. This one feature of our law should certainly be changed. Professor Hunt, in his address to your Association one year ago, made a suggestion that has my hearty approval, and that was to change the percentage from ten to twenty. That is, that all cheese made in Ohio that contains less than 20 per cent. of butter fat shall be branded as skimmed cheese. If the law requires at least 20 per cent., cheese-makers will try to secure about 25, so as to be safe, and this will insure a satisfactory article. It will drive out of the markets the heavily skimmed stuff that to some extent has invaded the markets and that has doubtless deceived many consumers as to the quality of the article they buy. It will also protect the makers of good cheese, and will undoubtedly on an average raise the Ohio standard. It may prove a hardship to some houses who are selling a heavily skimmed cheese for what it is really worth, but on the whole it will undoubtedly prove beneficial to consumers and to dealers who are making a good article, and will finally benefit milk producers also, who in time will reap the reward of the better reputation of Ohio cheese in the markets of the country.

The single change in our law suggested by Professor Hunt is all the change that is required and all that is desirable. In other respects our law is reasonable and just. In this one respect it is decidedly unreasonable and unjust. Permit me to urge this Association to work together heartily and in harmony for this single change.

With the law amended as suggested all that will remain for Ohio manufacturers to do will be to employ the most approved and skillful methods of manufacture, and then they must stand or fall upon the real merits of the article they produce. Skill in manufacture will then decide the value of the product and the law of "the survival of the fittest" will prevail.

THE OLEOMARGARINE LAWS—THEIR ENFORCEMENT AND EFFECT UPON THE BUTTER TRADE.

By F. A. STRANAHAN, Cleveland, O.

[Delivered at the meeting of the State Dairy Association.]

I have been assigned the task of telling you something of the practical effects of the oleomargarine traffic upon the legitimate butter trade, as they are met by the commission merchant and wholesale dealer of the large cities, and to explain how far this competition is fair and legitimate and to what extent it is fraudulent and unlawful; how well present legislation meets the emergencies of the traffic and how well our present laws are enforced.

It is not necessary to discuss whether or not oleomargarine is a healthful product and should or should not have the right to commercial existence. This question has been thoroughly gone over before Congress and in the various state legislatures during the discussion of proposed legislation. Ohio has taken liberal ground upon the tolerance of this product and has decided, through her representatives in the legislature, that oleomargarine, under certain restrictions of good behavior, may bid for public favor. New York and Pennsylvania have aimed to simplify the problem by absolute prohibition and while Pennsylvania has hardly had time to demonstrate the practicability of her law, New York has enforced hers until oleomargarine is practically out of use in the state. Ohio's more liberal position on this matter was not made necessary by the want of dairy sentiment, but rather dictated by a liberal commercial policy, which disparaged discrimination against any food product so long as it came reasonably within the requirements of health. Thus Ohio has sought to regulate rather than prohibit, and while our neighbors, with no greater dairy interests at stake, have taken an effective short cut, we have credited the manufacturers and dealers in butter substitutes with good faith and have depended upon them for an honest and lawful handling of their product. We have believed that comparatively few desire this substitute and that under a proper identity it could not become a serious competitor of butter. Our law makers have listened to and believed the argument of the oleomargarine interests, that their product was the poor man's boon and placed within his reach a wholesome substitute for an expensive luxury. This argument of poor man's butter has been raised in every state where restrictive legislation has been under consideration and has been sufficient in many instances to defeat proposed regulations or secure radical modifications.

I want to say to you from the light of personal experience that there is very little in the claim, and that instead of olemargarine being the great money saver its friends would have you believe, it has no equal today among food products as a swindle by which the common poor people of the cities, who can ill afford to be swindled, are made to pay butter prices for a comparatively inexpensive and undesirable substitute. In making this statement I would not have you believe that there are occasional instances where oleomargarine is sold for butter, but that it comes nearer being the rule than the exception. I believe that two-thirds of all the oleomargarine that is sold is sold for butter under a false pretense somewhere in its route between the manufacturer and the table where it is consumed. If it is not at the stand of the retail dealer it is at the boarding house, the restaurant, or hotel, but verily it will be a lucky package which does not somewhere have resting upon it a lie in its sale. Conscientious scruples do not enter into the daily program of the average oleomargarine dealer. There are, however, a very few notable exceptions; men who freely admit and despise the dishonest practices of the business; they handle it because they have to handle it to meet the competition of a neighbor and yet are outsold by the competitor who, under the aliases of oleo, dairy and Elgin creamery can get three kinds and prices out of the same tub. The activity and scheming of the unscrupulous dealer increases as the higher price of butter makes the greater inducement for the substitution of oleomargarine. Owing to the small percentage of butter fat in their compound they are not seriously affected in its cost by the advances in butter, and the expense to the dealer remains practically the same year in and year out, except perhaps, when they are levying a cent per pound for corruption and litigation purposes. Do not imagine, however, that they are not interested in the butter market. They are as much out of their element in June as an ice dealer is in winter, as oleo is costing practically the same and butter has become a distressingly close competitor. But notice the change as fall approaches or as butter has been sent upward by a drouth, as was the case the past season. They become happy and busy men and their countenances brighten in reverse proportion as yours, as dairymen, become serious over shrinking milk. Every cent or two of advance dictated by the Elgin Board on succeeding Mondays pays them a little better to substitute oleo for butter and they gradually push their deception into new fields.

The manufacturer caters to all the devices and means of fraud. One of these devices in Cleveland has consisted of four pound rolls, varying in shape and weight enough to give them the appearance of a mixed country shipment; they are decorated with some of those neat ladle strokes which have heretofore been a guarantee of country origin if not always of good quality. Another old and much used scheme to defraud the buyer is to place three tubs of oleo upon the counter all of which are of the same quality and cost to the dealer. To the prospective buyer one is priced, for example, at sixteen cents, one at eighteen cents and one at twenty cents. They are thus specified in answer to an inquiry as to the price of butter. The buyer takes it for granted that the higher price is a guarantee of purity and better quality and without exacting from the dealer any special assurance, takes from the higher priced packages. This is the most common scheme by which the sale of oleo for butter is promoted, and with a lax enforcement of the National regulations regarding the stamping of retail packages, it is made to do a profitable service. If there is troublesome inquiry on the part of the buyer and an inclination to have special assurance of the purity of the purchase the dealer is ready to give a plausible story as to the location of the creamery, which generally carries a name full of romance and appetizing suggestions. Nearly all of our market dealers run wagons, in addition to their business at the markets, visiting certain sections of the city on given days, supplying regular trade. Whatever slight restraint may rest upon the dealer at the market house is removed when this wagon starts on its route. The bulk of the business of these wagons is olemargarine under the guise of butter, sold as creamery or dairy butter according to the purse and gullibility of the customer. Since the late activity of the internal revenue authorities in our city, the packages for these routes are being put up with double wrappers, the outer one being removed just previous to the delivery to the customer.

There has never been but one brief week of any pretense to respect or obey the provisions of our Ohio color law. That week demonstrated to the oleo dealers and the public generally that it was the death knell to oleo. There was no room for deception. Olemargarine bore upon its face its unmistakable identity. The poor who had to have it got it at its true value; those who had been having it imposed upon them for butter and at the price of butter, got for once what they paid for. The artistic pyramids of "the poor man's product" remained for hours and days without the removal of the cap roll. The dealer stood behind his counter and had to sell oleo upon its merits, or rather make apologies for the absence of some of his improvised brands while it stood within reach of the customer, in fact, in a new livery. The hotel and restaurant keeper had to fall back on butter; the housewife who had played deceit upon the family for the sake of the saving of a few pennies per week was brought back to the purchase of an honest product; in fact the whole line of fraud had been annihilated at one stroke. Dealers meanwhile were having the best trade in pure butter that they had had for years. It did not take long to convince the oleo people that this was a too expensive observance of the law and oleo again appeared dressed in the clothes of butter. It has defiantly and successfully maintained this position of open violation ever since and has paid for it with an occasional arrest and fine of the dealers engaged in the business.

The national oleomargarine law, which was, I believe, a compromise in lieu of more severe restrictions demanded by the dairy interests at the time of its passage, has not been fully appreciated by the dairy interests of Ohio or any other state. They have paid little attention to its enforcement and it has been practically left to its fate in the hands of men who were as likely to be the avowed enemies of the dairy interests as its friends. I believe this indifference has cost the dairy interests of the United States many millions of dollars. I believe that the law strictly administered, with the same thoroughness and discipline which generally characterizes the government service, is a much greater protection to the dairymen than they have ever known or realized and that it will eliminate much of the fraud now practiced in the sale of olemargarine. That the manufacturers and consumers of dairy products are not getting this service is beyond question. In the northern district of Ohio to within a few weeks there has been an almost absolute disregard of the national revenue oleo regulations regarding the branding of packages, convincing an unprejudiced investigator that there has been either gross incompetency in the service or a willing acquiescence in the violations. I do not believe that it is confined to northern Ohio alone but that it is general the length and breadth of the land wherever oleo is sold, and offers an inviting field for investigation and reform. We have been led to believe that Uncle Sam is a severe master and that the infraction of his laws involves too great a danger to be indulged in to any considerable extent in any department. So far as the oleo regulations are concerned this is a delusion farthest from the truth. The law is being daily violated with impunity, the dairymen are being deprived of the protection the law intended and the consumer is being swindled into the purchase of oleomargarine at the price of butter. This condition is likely to continue until the dairymen and pure butter interests insist that the deputyships be taken out of spoils politics and placed in the hands of known and incorruptible friends of the dairy interests. This will be only a crumb from the table of the dispenser of patronage and as the law was intended as an agricultural protection, its administration should be placed in the hands of its friends.

The creation of the office of Dairy and Food Commissioner was a public necessity to save the citizens from the plunder of unscrupulous manufacturers of food products, who cared neither for the public health nor for the giving of honest values for the money received. Honestly and energetically administered, the office can be a boon to the public upon which no value can be placed. It should be sustained with liberal appropriations and the dairy interests, whose child it is, should be its guardians. They should insist upon efficient service from the Commissioner and his deputies and, failing to get that service, political preferences should be brushed aside and the vote of the dairy interest concentrated upon a man whom they shall seek rather than one who seeks their endorsement or takes the office as spoils of party politics without the asking, It should not be made a gift for politicians to whom the dairymen and public must beg for service. I believe if the dairymen are brought to realize that it is their servant, and that it is their special business to cultivate and coöperate with it, it can be made pleasant and politically expedient for every commissioner to honestly and vigorously enforce those laws in which the dairymen are so largely interested. While I would be charitable to past, present and future commissions I believe it is carrying forbearance to a fault to approve or condone under any circumstances a period of three years of impotency or inactivity which has permitted the oleomargarine interests to override the Ohio color law. The oleomargarine interests pursue an unlawful daily trade. They flaunt their product to the people openly and defiantly and say, "What are you going to do about it?" This has prevailed not only a day, a week, a month, a year, but over three years, and still their banner waves triumphantly and defiantly to the breeze, scarred only by an occasional shot from the dairyman's guard—the Dairy and Food Commission. Is the position impregnable or why has not a charge been made against the citadel of fraud and lawlessness?

There must be something more effective than a raid now and then, here and there, along the skirmish line of their defense, if the color law is to be anything more than an exasperating farce to the dairymen. The scattered, periodical fines imposed upon their constant violations are drawn from a fund which has many contributing sources and may be borne indefinitely and still leave a handsome credit side to the oleo dealer's ledger.

They have continued by permission to turn out an unlawful product that starts at the factory upon a career of fraud which is corrupting in its moral effects, cheating in its value and doubtful in its healthfulness. The color law which we shall look to the present and future Dairy and Food Commissions to enforce, makes oleo an honest product; removes the opportunity of falsehood in its sale; guarantees to the poor its purchase at its real value, and makes it possible for it to become what its friends have claimed it to be—an economy for the poor. Until its lawful manufacture is compelled it will go on practicing deception, crime, bribery and perjury. It will, with these devices, drive an industry represented by many millions of dollars in Ohio into ruin and bankruptcy. If permitted to continue in the guise and semblance of butter, every avenue of fraud will be open and Ohio does not contain a man wise enough and energetic enough, with the most liberal appropriation at his command, who could do more than make a miserable *fiasco* of the job of compelling an honest and lawful handling of the product.

If there were a reversal of the conditions; if the dairy interests of Ohio were represented by an investment no larger than that invested in the oleomargarine business, say one hundred thousand dollars, and the oleo interests were scattered in every township and square mile of the state and measured by many millions in value, and they were still violating the laws of the state they would be might but not right. The facts are that we are not only might, but we are right. We are invincible in numbers and political force; we are in a lawful business, contending for the enforcement of a law based upon justice and good morals. If we fail under these conditions it is manifestly our own fault, because we will not protest nor apply the remedies which should follow the ignoring of our protests.

In conclusion I cannot urge too strongly the necessity of organization, for through organization will come the righting of these wrongs. Politicians will generally measure the merits of your appeals for the redress of wrongs by the number of votes you control and, no matter how just your complaint, if it is not backed by organization and a menacing array of votes it will weigh lightly in the estimation of the average politician and office holder. To be effective the dairyman must maintain a fairly representative organization of the pure butter interests of the state. That organization should be the official watchdog and guardian of their interests, ever ready to sound an alarm to the dairy interests of the state. It should be the instrument to endorse or condemn prospective candidates for the office of Dairy and Food Commissioner, and should not fail to go into the merits and demerits of such candidates in a thorough manner, and, having found good reasons, should indorse or condemn as the facts warrant, without regard to political affiliations. Until the dairymen throw partizanship to the winds and make the politics of the Dairy and Food Commission, a question of business, they will only get what they deserve, a limited and unsatisfactory service. An office that is worth establishing is worth a liberal maintenance, and undue economy by the dairymen in their recommendations for appropriations or in their representatives in voting those appropriations, will be expensive economy to the dairy interests. The oleo interests are hard, persistent, unscrupulous fighters. They are ready to spend fortunes to maintain the yellow livery which they stole from an honest product. It will take not only an active and honest commissioner but liberal appropriations at his back to meet and combat their angles of evasion and violation.

This paper has been written in the light of the past, as I have found the facts to exist in the daily course of my business. In justice to the Dairy and Food Commissioner I wish to acknowledge his concession to the dairymen in the appointment of a special dairy deputy. I hope and believe that it will result in much good and if I am fortunate enough to be here one year from today and shall be called upon to give the facts as they may then exist I will be pleased to give the Commissioner full credit for any improvement which may be made in the meantime. I hope and believe that much good will result from this appointment.

Law Governing Farmers' Institute Societies in Ohio.

[PASSED APRIL 26, 1890, AND AMENDED APRIL 27, 1896.]

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That when twenty or more persons, residents of any county in the state, organize themselves into a farmers' institute society, for the purpose of teaching better methods of farming, stock raising, fruit culture and all branches of business connected with the industry of agriculture, and adopt a constitution and by-laws agreeable to rules and regulations furnished by the State Board of Agriculture; and when such society shall have elected proper officers and performed such other acts as may be required by the rules of the State Board of Agriculture, such society shall be deemed a body corporate.

SECTION 2. Not to exceed four farmers' institute societies organized under the provisions of this act, shall hold annual meetings under the auspices of the State Board of Agriculture in any one county in the state, and the State Board of Agriculture shall have power to determine the number and name, the times and places, for holding such institute meetings.

SECTION 3. When a society organized under the provisions of this act shall have held an annual farmers' institute meeting in accordance with the rules of the State Board of Agriculture, the secretary of said Board shall issue certificates, one to the president of the farmers' institute society and one to the president of the State Board of Agriculture, setting forth these facts and, on the presentation of these certificates to the county auditor, he shall each year draw orders on the treasurer of the county as follows: Based on the last previous national census, a sum equal to three mills for each inhabitant of the county in favor of the president of the State Board of Agriculture, and a sum equal to three mills for each inhabitant of the county in favor of the president of the farmers' institute society, where but one society is organized, but in counties where there are more than one farmers' institute society organized under the provisions of this act, and holding meetings under the auspices and by direction of the State Board of Agriculture, the said three mills for each inhabitant shall be equally apportioned among such societies, and warrants in the proper amounts issued to the respective presidents, and the treasurer of the county shall pay the same from the county fund; provided that in no county shall the total annual sum exceed two hundred and fifty dollars; and provided further, that the payment to any institute society shall not exceed the expense, as per detailed statement, provided in section four of this act.

SECTION 4. With each certificate of the secretary of the State Board of Agriculture to the county auditor, which certificate shall indicate the number of societies organized in the county and holding meetings by direction of the State Board of Agriculture, and before the auditor issues his order upon the treasurer, there shall be filed with the auditor a detailed statement of the expenses of the institute for the current year, no part of which shall be for salaries of officers of the insti tute society; but this provision shall not apply to the order in favor of the president of the State Board of Agriculture, which Board shall issue statement as required in section six of this act.

SECTION 5. At the annual farmers' institute meetings, held under the provisions of this act and under the auspices of the State Board of Agriculture, the said Board shall furnish lectures or speakers whose compensation and expenses shall be paid by the Board.

SECTION 6. At the close of each season's institute work, the State Board of Agriculture shall publish in pamphlet or book form, such lectures and papers delivered at the several institute meetings, as may seem of general interest and importance to the farmers, stock breeders and horticulturists of the state, copies of which shall be furnished the secretary of each institute society, and the balance issued to be for general distribution; the cost of preparing the matter and the distribution of the pamphlet or book to be paid by the State Board of Agriculture. Said Board shall also publish, in such pamphlet or book, a detailed statement of its receipts under the provisions of this act and the disbursements on account of institute work.

SECTION 7. Said original act, entitled "An act to provide for the organization and support of farmers' institutes," passed April 26, 1890, is hereby repealed and this act shall take effect and be in force from and after its passage.

Rules

Of the Ohio State Board of Agriculture for the Organization and Management of Farmers' Institute Societies, adopted May 26, 1896.

SECTION 1. Parties who contemplate organizing Farmer's Institue Societies and Farmers' Institute Societies already organized desiring to hold meetings under the auspices of the State Board of Agriculture, in accordance with the act of the General Assembly of Ohio, passed April 26, 1890, and amended April 27, 1896, must first present a petition to the State Board of Agriculture for the same, signed by twenty or more residents of the county, without regard to sex, but all signers must be of legal age. In order that the Board may act intelligently on such petitions, the petitioners should furnish replies to questions propounded by the State Board of Agriculture concerning proposed place of meeting, capacity of hall or building to be occupied, railway facilities, etc. Blank petitions with the questions to be answered will be furnished on application, by the Secretary of the State Board of Agriculture, at Columbus.

SECTION 2. Said petitions should be filed with the Secretary of the State Board of Agriculture not later than the first day of September of any year. Earlier presentation will greatly facilitate the work of the Board in considering applications and assigning dates and speakers. Petitioners will be promptly notified of such action as the State Board of Agriculture may take.

SECTION 3. After the petition for the holding of an institute meeting shall have been granted, the petitioners will proceed to organize, if not already organized, by the election of a president, vice-president, secretary, treasurer and an executive committee of three (the president, and secretary to be ex-officio members of this committee, making a committee of five), all to serve for the period of one year or until their successors are duly elected. After the first organization an election of officers shall be held during each annual institute meeting, only members of the society being entitled to vote. Of the officers, not more than two shall be elected who are residents of the same township. The society shall adopt a constitution and by laws in harmony with the institute law of the state and these rules.

SECTION 4. As soon as an organization is completed it shall be reported to the Secretary of the State Board of Agriculture, with the name of the society, and the names and post office addresses of the officers and a copy of the constitution and by laws.

SECTION 5. The secretary of each institute society shall keep in a substantial book or books a record of all meetings of the executive committee and society, and a roll of the members, with the post office address of each; first, the original petitioners for the organization, followed by residents of the county or locality, of legal age, who, by enrolling their names in the secretary's book, become members of the society.

SECTION 6. When a petition has been granted, and the society notified of the date assigned for its institute meeting and the lecturers to be furnished by the State Board of Agriculture, the executive committee shall proceed in due time to make arrangements for the institute meeting, by engaging hall, selecting the local talent desired, arranging for music and all other details necessary for the successful holding of a farmers' institute meeting, and preparing a program which shall occupy the time assigned for the meeting. In arranging the program, time shall be allowed for discussion of the topics presented and for miscellaneous questions. The speakers sent by the State Board of Agriculture are to occupy not more than half the time of the institute meeting, and local talent, discussions and music the remaining time. The program should be published for general distribution at least two weeks in advance of the institute meeting, and at the same time a copy mailed to the Secretary of the State Board of Agriculture and to each speaker who is to take part. Societies should thoroughly advertise and use diligence and enterprise to create an interest among the people and to secure the largest possible attendance. Every citizen of the county and locality ought to be informed as to the time, place and nature of the institute meeting. The executive committee shall have full authority to audit and settle all accounts made for and in behalf of the institute society.

SECTION 7. All institute societies organized under the institute laws of the state shall be strictly non-partisan and non-sectarian in every phase of their work, and no institute shall be conducted in the interest of any party, sect or society, but for the equal good of all citizens and farming communities.

SECTION 8. The presiding officers of the various institute societies of the state, holding meetings under the auspicies of the State Board of Agriculture, should always and under all circumstances prohibit discussions of subjects other than those pertaining to agriculture, horticulture, stock breeding, etc.; anything of a sectarian or partisan character should not be discussed or commented upon either by speakers or members of institute societies; no criticisms of state, county or township officials should be tolerated under any circumstances.

SECTION 9. No fee shall be charged for admission to institute meetings held under the auspices of the State Board of Agriculture; they shall be public and free to all, the object being to impart agricultural knowledge and experience free to all persons sufficiently interested to attend. If any society desires to hold quarterly, monthly or weekly meetings during the year, the expense of the same may be met by admission fees, subscriptions, collections or sale of season tickets. Nothing in this section shall prevent voluntary contributions or subscriptions for securing speakers desired other than those sent by the State Board of Agriculture.

SECTION 10. Within ten days after the close of each institute meeting, the secretary shall make a report to the Secretary of the State Board of Agriculture, blanks for which will be furnished. On receipt of such report by the Secretary of the State Board of Agriculture he will issue the certificate, according to law, which will enable the society to draw the amount due from the county.

SECTION 11. A society or its executive committee may, on the call of the president, hold such business meetings as may be necessary to transact the business of the society and arrange for the annual institute meeting to be held under the auspices of the State Board of Agriculture; and the traveling expenses of the executive committee for such meetings may be paid as other items and charged with other expenses of the institute.

SECTION 12. When the secretary of a farmers' institute society shall send a written report to the Secretary of the State Board of Agriculture, as provided by Section 10, of these rules, he shall state the cost of the institute meeting, (not including expense of speakers sent by the State Board of Agriculture), number in attendance during the institute meeting, speakers who filled appointments, speakers absent, whether speakers were acceptable or otherwise, and report any feature or matter of special interest.

SECTION 13. The State Board of Agriculture requires that lecturers employed by the Board shall devote their time and efforts to the discussion of such subjects as are clearly provided for by the institute law of the state, namely, "Farming, stock raising, fruit culture and all branches of business connected with the industry of agriculture."

Thirty-First Annual Report

OF THE

OHIO STATE
HORTICULTURAL SOCIETY

For the Year 1897.

Organized in 1847 as Ohio Pomological Society.

OHIO STATE HORTICULTURAL SOCIETY.

OFFICERS FOR 1898.

E. H. CUSHMAN, President	Euclid, O.
W. N. SCARFF, Vice President	New Carlisle, O.
W W. FARNSWORTH, Secretary	Waterville, O.
N. OHMER, Treasurer	Dayton, O.

AD INTERIM COMMITTEE.

First District—C. H. WAID	Emery, Fulton County.
Second District—N. H. ALBAUGH	Tadmor, Miami County.
Third District—A. SHIRER	Dayton, Montgomery County.
Fourth District—WM. MILLER	Gypsum, Ottawa County.
Fifth District—O. W. ALDRICH	Columbus, Franklin County.
Sixth District—E. G. COX	Bradrick, Lawrence County.
Seventh District—E. M. WOODARD	Kirtland, Lake County.
Eighth District—H. H. AULTFATHER	Minerva, Stark County.
Ninth District—S. R. MOORE	Zanesville, Muskingum County.
Tenth District—C. L. WHITNEY	Warren, Trumbull County.

STANDING COMMITTEES.

NOMENCLATURE.

W. J. Green	Wooster, Wayne County.
E. M. Woodard	Kirtland, Lake County.
S. R. Moore	Zanesville, Muskingum County.

ANTOMOLOGY.

Prof. F. M. Webster	Wooster, Wayne County.

VEGETABLE PATHOLOGY.

Prof. A. D. Selby	Wooster, Wayne County.

EXECUTIVE.

The President, Secretary, and

N. H. Albaugh	Tadmor, Miami County.
Wm. Miller	Gypsum, Ottawa County.
E. M. Woodard	Kirtland, Lake County.

SAN JOSE SCALE LEGISLATIVE COMMITTEE.

N. H. Albaugh	Tadmor, Miami County.
J. J. Harrison	Painesville, Lake County.
F. M. Webster	Wooster, Wayne County.
A. D. Selby	Wooster, Wayne County.
O. W. Aldrich	Columbus, Franklin County.
W. H. Owen	Catawba Island, Ottawa County.
W. W. Farnsworth	Waterville, Lucas County.

CONSTITUTION

OF THE

Ohio State Horticultural Society.

1st. The Society shall be known as the Ohio State Horticultural Society.

2d. Its object shall be to select and disseminate information relative to fruits and other horticultural products, and to promote the taste for horticulture and rural embellishments among the people.

3d. Its officers shall be a President, Vice President, Secretary and Treasurer, who shall, in addition to their official duties, constitute a board, empowered to fill all official vacancies that may occur during the year by death or resignation. They shall be elected annually, by ballot, and hold their offices until their successors are elected, but the Secretary shall not enter upon his duties of his office until the first day of August following his election.

4th. The President shall preside, and conduct all meetings of the Society, and in his absence the Vice President shall perform the same duties.

5th. The Secretary shall record all doings of the Society, perform all correspondence, and with the assistance of the President, collate and prepare the annual report, and other matters for the public press.

6th. The Treasurer shall collect and hold all funds of the Society, and pay out the same only on the order of the Secretary, countersigned by the President.

7th. The membership fee shall be one dollar a year, payable in advance, and any person can become a member of the Society by forwarding the fee to the Secretary or Treasurer. All delinquent members shall be notified by the Secretary not later than February 1st, of each year, and shall not be entitled to the annual report of the proceedings of the Society until their dues are paid. If the dues are not paid before January 1st, following, their names shall be stricken from the list of membership.

8th. There shall be an *Ad Interim* Committee, consisting of the officers of the Society and ten other members, residents of different sections of the state, representing specific districts, to be elected annually, whose duty it shall be to observe and take notes of new and rare fruits, the fruit crops, and other matters of interest to the Society during the season, in their several sections of the state, and report the same at the annual meeting of the Society, It shall also be the duty of the members of this committee to solicit membership to the State Society, and to encourage the establishment, and promote the interests of local Horticultural societies in their respective districts.

9th. The annual meeting of the Society shall open on the first Wednesday in December of each year, at such place as may be designated by a vote of the Society, notice of the time and place, together with the order of exercises to be sent in due time to each member, by the Secretary. At this meeting the President will be expected to deliver an address, and the report of the *Ad Interim* Committee, Standing Committees, Secretary and Treasurer, shall be read, and the usual business transacted, besides papers and discussions on horticultural topics.

10th. There shall be an Executive Committee, consisting of the President, Secretary, and three other members of the Society, to be chosen by the President from the *Ad Interim* Committee elected at each annual meeting, which Committee shall have general charge of the affairs of the Society.

11th. This constitution may be amended, and by-laws may be adopted for the government of the Society, by a vote of two-thirds of the members present at any regular meeting.

State Fair Meeting.

The customary State Fair Meeting of the Society was a brief business meeting held in the Masonic Cathedral, Wednesday evening, Sept. 1st.

J. J. Harrison, Wm. Miller and W. N. Scarff were appointed a Committee to examine the new fruits and flowers on exhibition.

The officers of the Ohio Experiment Station, at Wooster, and the various farmers' organizations of Wayne county, sent an urgent invitation to our Society to hold its annual meeting at Wooster.

On motion the invitation was unanimously accepted.

REPORT OF THE COMMITTEE ON FRUITS AND FLOWERS.

As one of the committee appointed to report on articles on exhibition, at the Columbus Meeting of the Ohio State Horticultural Society, I beg leave to submit the following:

In cut flowers there were two displays of cannas, one on each side of the speaker's stand. As there was no name of exhibitor to be found on either, we do not know to whom to give the credit.

The one on the right contained the following sorts:

Mad. Molin, South Park, Mad. Alphonse Bouvier, Egandale, P. J. Berckmans', Columbia, Souv. de Mad. Crozy, Midway, Chas. Henderson, J. C. Vaughn, Mad. Crozy, Queen Charlotte and M. Mesnier.

The one on the left the following:

Papa, Austria, Eldorado, Dwf., Chicago, Mad. Montifere, Italia, Yellow Crozy, Burbank, Sophia Buckner, Beauty of Poitifere, Souv. de Antoine Crozy, Stella, Seedling of Florence Vaughn, Flamingo, Alphonse Bouvier, Paul Marquant and J. D. Cabos.

There was also a display of Gladioli by an unknown exhibitor and there was a very creditable decoration consisting of Palms, Arucaria, Pamanus, Cyperus, etc.; also vases of Roses, Geraniums, Salvia, etc.

Mr. N. H. Albaugh presented a plate of the Diamond peach which were quite attractive in appearance, a yellow cling of the appearance of the old Orange Cling and of about the same quality. This peach was named by the Society some years ago.

A seedling apple presented by Daniel J. Miller, of Saltillo, Holmes county. This was a large fine appearing apple of good quality, if hardy and a good bearer it may prove a valuable orchard variety.

Geo. W. Campbell, Delaware, Ohio, had a fine display of his new grape, Campbell's Early, which made a grand display both in the size of bunch and berry, and in quality quite superior. It appears to possess merits that will undoubtedly place it in the very first ranks of our native sorts.

H. G. McPike, of Mount Lookout Park, Alton, Ill., made an attractive display of his new seedling grape, The M'Pike. The bunches large and compact with berries of mammoth size, covered with a beautiful bloom, color blue black, quality excellent for so large a grape.

Prof. Craig, of the Ottawa, Canada, Experiment Station, made a large display of Russian varieties of apple, about a third of a hundred sorts. One of the most attractive was the Yellow Transparent, although there were others that may prove of equal value. Their hardiness being their chief recommendation, much greater interest is taken in them in the Dominion of Canada, than this side of the Lake where less hardy sorts are of much greater value. Prof. Craig also presented three varieties of hardy Plum, Col. Wilder, Cherry and Early Red, and though not as large and showy as many of the kinds grown in Ohio, may prove of value here on account of their extreme hardiness.

Your committee found several varieties of apple on exhibit without any name, either of variety or owner, and whether presented as seedlings or for name, we had no means of knowing.

Respectfully submitted,

J. J. Harrison.

REPORT OF W. N. SCARFF, ON NEW FRUIT AND FLOWERS OF MERIT AT POMOLOGICAL SOCIETY AND STATE FAIR.

The only peach on exhibition was Diamond, by Albaugh Nursery Co., Tadmor, O., grown in their Kentucky Orchards. While not quite so large as usual, the specimens exhibited were fine ones and made an excellent showing. It is a beautiful Yellow Flesh, Semi-Cling, of finest flavor.

A plate of seedling apples exhibited by D. J. Miller, Saltillo, O., are worthy of mention. Specimens shown were of good size and appearance, said to ripen from November to January. As they were not yet ripe, nothing could be said of their eating qualities.

The McPike grape, by H. G. McPike, Alton, Ill., was shown in immense clusters together with healthy looking wood and foliage. Color, blue black; very juicy, of excellent quality, ripening with Warden.

A fine collection of Gladioli was shown by The Cushman Gladolus Co., Euclid, O. This collection embraced the leading named varieties and showed a great variety of colors.

PROCEEDINGS

OF THE

THIRTY-FIRST ANNUAL CONVENTION

OF THE

Ohio State Horticultural Society,

Held at Wooster, Ohio, December 1, 2 and 3, 1897.

The convention was called to order by the president, E. H. Cushman, at two o'clock P. M., at the Ohio Experiment Station, who, after calling attention to the splendid exhibit of fruit and vegetables to be seen in another part of the building, announced the following committees:

Committee on Business:—

W. N. Scarff, New Carlisle.
S. R. Moore, Zanesville.
C. C. Sterling, Grand Rapids.

Committee on Membership:—

Professor A. D. Selby,
W. W. Wallace,
Philip Baum,
P. S. Ihrig.

The President: Now, the duty of this committee is a very pleasant one, especially when it is done successfully, and that is to get memberships to our State Society; and we are always ready and glad to welcome anyone who sees that it is worth a dollar to be a member of the Ohio State Horticultural Society.

Taking up now the regular program, we will first listen to an address by W. J. Green, on "Fruit Notes for the Season."

FRUIT NOTES FOR THE YEAR.

BY W. J. GREEN.

A comparison of the two very dissimilar seasons of 1896 and 1897 offers some valuable suggestions to the fruit grower.

In 1896 there was an overproduction of nearly all kinds of fruit that can be grown in this latitude, and prices were ruinously low, except for the best grades. Many growers made an attempt to work off everything, without much regard to quality, thinking that the low prices did not warrant much care in assorting and packing. People were thus given a chance to discriminate and they exercised that privilege to the fullest extent.

The lesson taught was that it pays to grow only the best, and many added the qualifying phrase, in seasons of overproduction.

The present season of scarcity of home-grown fruits has shown the falsity of the qualifying phrase. It is true that all grades of apples and peaches have been higher than in 1896, but there is still a wide gap between the price of the best and the poorest.

People are buying and using more fruit each year, but there is such a variety from which to choose, and in such immense quantities, that buyers seldom take any except the best, unless at nominal rates merely.

The fact is still more evident than last season that none but the best fruit will sell at paying prices, and fruit growers may as well accept the situation first as last.

The fact is, our large cities are well supplied with fruits the year round, whether there is a crop locally or not. The cities do not wait impatiently for our fruit crops to ripen, nor do they concern themselves greatly if our crops fail, for they can draw their supplies from the ends of the earth, and have a surplus for the small towns besides. The familiar street cry, "Nica banana," has its effect; so too, has the placard bearing the legend, "Choice California Fruit."

The big red Ben Davis, which takes so fine a polish on the greasy Italian coat sleeve, and the showy but tasteless California peaches have come to stay and they will be in evidence when our crops fail. They have their mission, however, for which many of our varieties are not so well fitted. They are for show, for ornament, for city boarders to look at. But people do not buy fruit altogether to ornament the table. With the great variety from which to choose they are beginning to learn something about quality.

The time has come when we can no longer afford to disregard the matter of quality in fruit any more than appearances. We are sure to find it increasingly difficult to compete on appearances alone, but we can grow beautiful fruit if we try, and more than that we can grow fruit that is good to eat.

Had we no means to combat insects and fungi, the case would indeed be hopeless, but with our present knowledge we are able to grow as fine fruit as was ever grown in this climate.

The efficacy of spraying has often been discussed in these meetings but I cannot pass the present season's result by without reference in these notes.

The apple crop of 1896 was large, but not general. There were thousands of orchards in this state that might have borne a crop this season but did not because they were sick. They had been ailing before, and the fact was well known. The case had been diagnosed and a remedy found, a prescription given and widely published. It cost but a small sum for the state to get this prescription. It was cheap; too cheap. No one had to deny himself a quid of tobacco or a whiff of smoke to get it. Many did not think the prescription worth much more than it cost. They wanted a better demonstration of its value, if it had any. Well, they have had it, and at a thousand times its original cost. However, there are some Rip Van Winkles who do not know that the efficacy of spraying has ever been demonstrated, nor that the results of the present season are specially noteworthy.

A general crop was not possible, because of the previous season's crop, but a general failure was not necessary.

The cause of the apple crop failure where the trees bloomed last season must be laid mostly to the apple scab fungus, as it was more than ordinarily severe, and where proper treatment was given more or less of a crop was secured. In all of the Station's experiments no more striking results have ever been secured than those of last season, where the cost of treatment was repaid more than ten dollars to one.

The orchard in question has been sprayed five years, except two rows which have never received treatment. Some trees of each variety are in the sprayed portion and some in the unsprayed.

Taking the average yield, of the sprayed and unsprayed trees separately, we have the following results:

Northern Spy......	Sprayed, ave.	per tree,	10.0	bu.	Unsprayed, ave.	per tree,	6.5	bu.
Baldwin..............	"	"	8.5	"	"	"	3.25	"
Pearmain............	"	"	3.6	"	"	"	0.75	"
Baltimore	"	"	7.0	"	"	"	3.5	"
Ohio Pippin........	"	"	6.6	"	"	"	0.5	"
Wells..................	"	"	5.3	"	"	"	1.0	"
Grimes' Golden...	"	"	6.25	"	"	"	1.5	"

The average per sprayed tree was 6.75 bushels, and of the unsprayed, 2.42. Fifty sprayed trees produced 4.33 bushels of apples more per tree than the unsprayed, which was secured at a cost of not more than twenty cents per tree. In the case of the Northern Spy and Baldwins the actual profit derived from the treatment was more than $5.00 per tree.

By unsprayed trees are meant those on which no Bordeaux mixture was used, but Paris green was applied to the others for the apple worm. Some injury was done to the foliage in this manner. These trees suffered not only from the effect of the apple scab fungus but from the added injury of the Paris green. In thinning the fruit when small, in mid-summer, the poorest fruit was taken off. Both these factors make the benefit from the treatment with Bordeaux mixture appear greater than it really is, but there is sufficient evidence to show that the effect of the treatment was highly beneficial. A further factor, on the other side, in favor of the treatment, but which does not show in the above tabular statement, is that of improvement of keeping qualities of sprayed fruit. This is enough to offset the entire cost of treatment, and would make up for the injury done by Paris green.

It is proper to state the fact that when the foliage of trees is diseased it is much more susceptible to injury by Paris green of London purple than when healthy.

The past season's experience confirms my belief that the painstaking Ohio orchardist has reason to be hopeful. He can grow good crops of fair apples of high quality if he simply exercises the same care that he would to grow good cattle or corn. On the other hand, uncared for Ohio orchards are about as unprofitable as scrub stock fattened in the fence corner or corn turned out to grass.

What varieties of apples to plant, is the question of interest just now, for many that we have been growing are not showy enough to meet the market requirements, besides we ought to look for varieties in which beauty and quality are combined.

For the southern part of the state, Rome Beauty and Ben Davis cannot be dispensed with although of inferior quality, nor can the Baldwin be omitted from the list for northern Ohio.

Both east and west of us they are planting Jonathan and York Imperial more extensively than formerly, and so far as I have observed these varieties in this state, they are behaving satisfactorily.

The Jonathan should be top grafted as the tree is a slow grower. It is one of the best selling apples at the present time, although not large. This is because of its beauty and quality as well. York Imperial has sold well in foreign markets and is a reliable sort to grow. The apple worm does not seem to attack it as freely as some other kinds, which is a considerable advantage.

The Morris Red has not been tested over a very large portion of the state, but so far as known it is proving very satisfactory. It has both beauty and quality to recommend it.

It hardly seems advisable to recommend such varieties as Northern Spy, Rambo and Canada Red for market. There are possibilities in them, however, not thought of before the advent of spraying. They are all sought after in the market; they are prolific bearers, and when properly sprayed can be grown about as safely and surely as most other varieties. They are not good keepers, but in their season are profitable.

Spraying improves their keeping qualities as well as their appearance.

There is little that can be said concerning peaches, pears, plums and cherries owing to winter killing.

It seems unfortunate that the dividing line of temperature seldom comes just right so that we can distinguish between so-called hardy kinds of peaches and the tender sorts.

We hear about kinds that will endure fifteen or twenty degrees of cold below zero, but somehow when the temperature falls low enough to kill the tender kinds it fails to stop at just the right point to let the hardy sorts escape. No doubt some kinds are more hardy than others, but the difference is so small as to be of less practical importance than many would have us believe.

In 1896 no variety escaped injury at the Station and all bore a few peaches. Had there been a wide difference in hardiness there ought to have been some complete failures, but even the Early Crawfords were not all killed. Some, also ought to have escaped but Crosby and Champion were not notably better than the others. In 1897 all were killed, and I must confess my inability to determine the dividing line of hardiness of varieties.

The case is nearly the same with European plums, there being but one variety among those growing at the Station that is notably hardier than others. This is Moore's Arctic. There were some varieties that bloomed scantily, while many did not bloom at all. Nearly all of the fruit dropped from those that showed a few blossoms, however.

Scarcely a blossom appeared on any of the Japanese varieties, but the majority of the American sorts passed the winter with but little injury.

Nearly all varieties of sweet cherries were injured but the sour sorts escaped. As we have them, it is difficult to distinguish between Ostheimer Wragg and Suda Hardy. All are dwarf in habit of growth ; at five years of age not being more than 6 to 8 feet in height, having about half the top of the Early Richmond. They begin bearing the second or third year after planting and produce bountifully. The time of ripening is after Montmorency, and the flesh is as dark and rich as the Morello.

It seems to me that this variety, or these varieties, have a place, and cannot fail to prove profitable for market, and for the home garden nothing can be more satisfactory. The dwarf habit of growth is not objectionable. It simply means more trees to the acre.

It is stated, however, that in the east canning factories use less of the dark fleshed sorts than formerly. They prefer Montmorency and Early Richmond to all others.

The Russian Apricots were, of course, all killed by cold weather, for their tenderness has been known for some time.

Regarding currants and gooseberries nothing new can be offered, as the very latest varieties to be introduced have not fruited sufficiently. It is not out of place, however, to give tardy praise to the Crandall currant. Its healthfulness and bearing qualities are undoubted, but it seems not to be generally appreciated to the extent that it deserves, as a fruit for sauce and pies. It is hardly second to the cherry for pies, while for sauce is really superior to that fruit. The fruit will hang on the bushes so long that it often fills a gap when pie and sauce material are very scarce.

Another fruit, which may have been unjustly condemned, is the Japan Golden Russet Pear. It is certainly not a dessert pear, nor is it hardly edible, in the raw state, but like the Kieffer it is improved by cooking. For canning it does very well, and an excellent article of candied pears may be made from it. The tree has glossy, ornamental foliage and is a precocious bearer. There is but little new concerning blackberries, if indeed, anything. Eldorado, Snyder, Ancient Briton and Early King passed the winter safely. The latter variety was commented upon favorably last year and there is nothing to take back concerning it, for it is both hardy and early.

Another season's experience with the Kansas raspberry places it a notch higher than before. The plant is vigorous and prolific and the berries are of the largest size.

Eureka suffered greatly from the anthracnose in 1896 but bore a good crop this season, showing great recuperative powers.

Lotta was hardly as good as in previous years, and yet was very satisfactory.

Conrath has not done as well here as Eureka and Kansas.

Munger is a promising late sort; prolific, firm, and of good size.

Mills' Nos. 7 and 15 are both large, prolific mid season varieties, of considerable merit for drying or for market.

The newer red sorts, King, Loudon and Miller are all good. It is not easy to say which is best, but the King has rather taken the lead here. The berries are large, firm, and of good color, but drop rather too easily, thus occasioning considerable loss, unless picked with more than ordinary care. The plants are vigorous and prolific.

Loudon has the opposite fault of clinging too tightly and the berries do not come off readily as soon as well colored, but this fault is less objectionable than the other.

I do not see wherein the Miller greatly excels the Brandywine.

Haymaker is a new candidate of considerable promise. It is much like the Columbian, but the plants are less thorny, and possibly more prolific, and the fruit is rather more acid. There is a prejudice against this class of raspberries, because of their dingy color, but they are valuable for home use, and for market also where they become known. It seems probable that the Haymaker will stand at the head of its class.

The newer varieties of strawberries have been commented upon in a special bulletin, issued in September, hence it does not seem to be necessary to mention any except those about which there is most interest at present.

Clyde is one of the most promising of the perfect blooming varieties. The plants are vigorous and prolific. The berries are large enough for market purposes, and hold up well in size to the last of the season. The color is rather too light and the flesh not quite firm enough, but these faults are not sufficiently pronounced to detract greatly from its value. The plants need to be restricted, if grown in matted rows, but if treated in the proper manner it can hardly fail to prove valuable for near market and for the home garden it will, no doubt, become a favorite.

Carrie is very much like Haverland, but seems to be firmer and to have a deeper color. It is a safe variety to try and will most likely please the market grower.

Enormous is another imperfect flowered variety of more than ordinary promise, because of vigor, prolificacy and large size. It is more prolific than Bubach and about the same size, or perhaps a trifle smaller, and firmer. Its season of ripening is medium and it holds up well in size to the last picking. It is one of the most promising varieties of its class.

Glen Mary is a perfect flowered variety of much the same appearance as the Enormous but the berries are less regular and an occasional specimen is not fully colored. It is not quite firm enough for long shipment but will do well for near market, and is particularly desirable for the home garden. It excels Brandywine in productiveness and is nearly as late in ripening.

The Margaret is one of the most beautiful of berries, large, glossy and highly colored. It has a perfect flower and is especially adapted to plant for home use. It may lack somewhat in vigor and prolificacy for market, as compared with some other sorts, but with high culture it will most likely prove satisfactory. Where fancy berries are desired it is especially valuable.

Ruby is another good perfect flowered variety, medium to late in season. Although it begins to ripen quite early it holds out until quite late, the last berries being fully as large as the first, hence it may be classed as a late sort. It is especially valuable because of good color, firmness and uniformity of size throughout the season.

The Staples has been described as a perfect flowered Warfield, and for this reason it is a good companion for that variety. It is rather earlier in ripening than the Warfield, but the difference in the time of blooming is not sufficient to become a matter of serious consideration. It must be treated in the same manner as the Warfield and not allowed to make too many plants. It should be grown in hills or thin matted rows.

Tennessee Prolific is another valuable perfect flowered sort. The plants are vigorous and prolific, and the berries are medium to large, of good color but somewhat soft. For near market it will answer admirably, and for the home garden as well. It is a suitable companion for the Haverland, ripening at about the same time and the berries being similar in size and color, although less regular in form

Professor Green (Continuing):

In regard to strawberries, I will say that I think more highly of the Brandywine than ever before. It is very late and quite prolific for a late sort, and everyone of the berries is perfect.

The Clyde is one of the best of the new varieties that we have tested, a perfect flower, the plant is very prolific, very large, light in color. It has so many good qualities, I believe the fruit growers ought to try it.

The Carrie is another I think a great deal of; it is a seedling of the Haverland, and I think one of the most promising varieties. Then there is another variety, I think the best I have seen yet, the Luther. I suppose the plants cannot be obtained yet.

The Margaret is one of the most beautiful berries I have ever seen. I think it is only fairly prolific, but prolific enough to make it valuable for the market, particularly where fancy berries are required.

I believe last year I spoke rather unfavorably of the Staples, on account of its size, but we have succeeded better in the past year than we did before, for a reason I cannot state. Those who are testing new varieties will find they will do well one year and not another for reasons you cannot find out.

I believe that is all I have to say.

Mr. Woodard: I would like to ask Professor Green what the cost was per tree for thinning this apple.

Professor Green: I cannot answer that question.

Mr. Woodard: Can you not answer it approximately?

Professor Green: I will try and answer it a little later; will try and find out.

Mr. Woodard: I would like to ask Professor Green how it was done.

Professor Green: Just as thinning is always done.

The President: You didn't take a rake then? I believe that would be a good practice if you couldn't afford to do it any other way.

Mr. Aultfather: I would like to know which variety he had reference to.

Professor Green: I mean the Winter Rambo. I suppose it ought to be called the Fall Rambo, because it don't keep very late.

Mr. Duer: I have been shipping apples for a good many years and I never found a good foreign market for the Rambo. It may be different now from what it was when I shipped Rambos. Now, there is another apple that bears well all through Ohio, and that is the Jonathan. Yesterday's Cleveland Leader quoted Jonathan at one dollar higher than any other apple in the market. If I were a young man all the apples I would put out would be Jonathan.

Mr. Moore: I want to say a word about the Jonathan. It is a fairly good grower in our part of the country and it is certainly one of our best apples; a pretty regular bearer.

Mr. Duer: I want to say one word about the Gate apple. We do not want to let that good apple go out of existence. It is one of the grandest apples we have in Ohio. We ought to get the genuine Gate apple.

Mr. Moore: The Gate apple seems to be a little tender in regard to the matter of stem or twig blight, but it is a good grower.

Mr. Carruthers: I would like to make an inquiry about the Sutton Beauty. Mr. J. H. Hale, of Connecticut, reports that at the head of his list for Connecticut. I would like to know from the members what its standing is in Ohio.

The President: I doubt whether any of our Ohio men have had sufficient experience to answer that question.

Mr. Albaugh: It is a little small. While the apples are smooth and nice enough I do not believe that central and southern Ohio are its proper habitation. It may do very well in Geneva.

Now, a few other things in regard to apples. That Jonathan variety, if it is to be grown in the nursery, must be grown on very rich land. You cannot grow it on the ordinary land and get twenty per cent. of the trees up to size, ¾ of an inch in diameter and five to six feet high at three or four years old. So that a nurseryman who expects to grow Jonathan apple trees in the nursery for profit, had either better plant them in a little place by themselves or be sure to have very rich ground to grow them in.

I wonder why Professor Green didn't speak of some other apples that do not ripen as late as the winter varieties that he mentioned. There is probably no apple to-day that pays the fruit grower better than the Duchess apple that ripens about the first of September, and right along with that, with ruddy color, is the Maiden Blush, that if sprayed, will bring just as good returns as any other apple you can get. So don't forget that you can grow such varieties as Duchess and Yellow Transparent that begin to ripen with the Rambo and bring great big prices.

Mr. Whitney: Add the Early Harvest.

Mr. Albaugh: Yes, add the Early Harvest.

Mr. Shirer: And the Wealthy.

Mr. Albaugh: There is another apple. That same Wealthy apple will make you as much money as any tree you can plant. Hardy, early bearing, fine flavor, perfect in form and beautiful in color, but it is not a winter apple. Another thing nearly every one of these early varieties bear; they are surer bearers than winter apples.

Now, there is another apple that ought to be grown more in southern Ohio. It has paid everybody that I know of that has grown it. It is a good apple, but it is not an early apple,—Hubbardson's Nonsuch. This year we had in our orchards more Hubbardson's than all the other varieties.

Mr. Moore: You cannot make a mistake on that variety.

A Member: I plant a good many Jonathan. You can put them on high ground, but the ground wants to be good. I tried them in some lower ground and I found where they are crowded in with other trees they don't do so well. I want to endorse all that has been said of the Wealthy tree, but it don't hang on the tree as well as it might. You must take it off of the tree and make your sauce of it before it ripens.

Mr. Albaugh: It doesn't need to get entirely ripe.

The President: There is one point that occurs to me in mentioning all these varieties of apples. No doubt they are all good, but so many of our horticulturists say you make a mistake in planting too many varieties. How is a man going to determine which four or five to select?

Mr. Albaugh: A dozen varieties are not too many.

Mr. Bear: I believe that you want several varieties together and then the pollenization will be all right.

Mr. Albaugh: I want to say to Brother Duer and others who are anxious that the Gate or Belmont shall not become extinct, not to forget to plant plenty of that same Grimes' Golden, and you will get a better apple.

Mr. Shirer: I wanted to learn about the raising of strawberries, and after the Professor's report last year I thought he was getting very theoretical. Now, as usual I "got bit." I don't know whether the Professor did it purposely or not, but this morning I walked nearly to the other end of the farm in order to see how he is growing strawberries, and when I got out there he had them all covered up so I could not make an inspection. Now, that is a bad trick in the Professor. (Laughter). The next time we come here please keep them uncovered until the convention is over. (Continued laughter.)

The President: If there is no further discussion of this subject we will now listen to a paper on "The Cherry for Market and Canning," by J. C. Bear.

THE CHERRY FOR MARKET AND CANNING.

By J. C. Bear.

Mr. President and Members of the Society:

First, we will select a list for market in order of ripening. For sweet I would select the Ida. The trees are, I think, a little more hardy than most sweet varieties. The fruit is good size, firm flesh and yet not hard; small pit, color pale yellow with red cheek and very attractive on market stand. It is not subject to rot or cracking open on trees; quality very good.

Of sour varieties I would plant in order of ripening, Dye House, Early Richmond, Montmorency, Ostheim and English Morello. I would plant more, I believe, of the English Morello than any other variety of late cherries, as in our market they are very much in demand by the late buyers. The early varieties are mostly bought for immediate use, so that it is only the very earliest that will command a good price, while the medium and late ones are always in demand at fair prices.

For canning I would select the Ida for sweet, and Montmorency, Ostheim and English Morello for sour. What we want in a canning cherry is a good dark, heavy-meated fruit, that will bear thinning when taken from can to be used as dessert or for pies. The English Morello and Ostheim are just that kind of cherries. The trees are not fast growers, but will come into bearing young, and are regular bearers as a rule. I think the Ostheim a little better in quality than the English Morello, but sometimes find it subject to dropping from the trees when fully ripe if not picked at the proper time, and also find it does not ripen evenly on the tree. In looking over the cherries for canning, I almost come to the conclusion that the English Morello about fills the bill, yet we must not forget some of the good qualities of the Montmorency. Cultivation should begin as early in the spring as ground will permit; shallow cultivation is best, and not too close to the body of the tree. The cultivator or disc harrow should be in the cherry orchard

after each rain as soon as dry enough, to keep from baking the ground, and should there be no rain for several weeks during growing season then harrow every week. Cherry trees should not be planted deeper than necessary to keep them standing erect during fruiting. Very rich soil is not best for cherry trees.

The President: The discussion on this subject will be opened by Mr. W. W. Farnsworth.

Secretary Farnsworth: I consented to open the discussion mostly for the sake of asking questions and bringing out information, as the cherry question is one in which I am much interested. Perhaps cherries have been discussed less in horticultural meetings than any other fruits, and I have always been very much interested in their growth. I am now growing principally the May Duke, Dye House, Early Richmond and Montmorency; am not growing as large a number of varieties as Mr. Bear mentions. I originally planted plenty of the Dye House and some of the Early Richmond because they sell in the market. I found that the Dye House were apparently as hardy and productive as the Richmond and resemble it very much, the only real difference being that they are three or four days to a week earlier; but I find that the market don't call for them as I anticipated. They come into the market when it is glutted with the strawberry, right in the midst of the strawberry crop, and the price has been lower than it has for the Richmond and Montmorency, coming later in the season. So I shall plant no more Dye House. Some might say that for home use it would be an advantage to lengthen the season, but on the other hand I think with the cherry we should reverse the ordinary rule. We usually say in planting any variety of fruit for home use the period of ripening should cover some time, but in the cherry we meet with this serious objection, that if we have a half dozen varieties ripening five or six weeks, there may possibly be enough fruit for the birds, and the only satisfaction we get is to see the birds enjoy themselves, whereas, if we had all of one variety we could feed the birds and have enough left for ourselves.

The Early Richmond is probably grown more extensively than any other variety. It has many strong points. Early in coming into bearing, strong tree hardy and productive. I made one mistake in planting mine. I got them too close—16 feet; 18 feet is close enough.

The Montmorency has one objection; it ripens somewhat unevenly. You must let them go until part of the fruit is dead ripe unless you want to pick part of a tree at a time.

A Member: They ripen just right for the birds.

In regard to cultivation I believe that the sour cherries should be thoroughly cultivated. I have been successful in growing the sweet ones in sod. Their tendency is to grow too rapidly and there is danger of winter-killing. The home of the sweet cherry is near Cleveland, near Mr. Woodard's home where a great many of our choicest sweet cherries originated; in that soil naturally underdrained and where the climate is modified by the breezes from the lake.

The May Duke is quite profitable but not as productive as the sour varieties, but coming so very early sells pretty well before the market is well supplied with strawberries. I have found it on sandy soil quite hardy. I have 50 or 60 trees of them and have never lost a tree that I could attribute to winter-killing. I cultivate them thoroughly the forepart of the season and then sow to buckwheat along the first of August, not allowing the buckwheat to mature. If Jack Frost didn't cut it, I would cut it, and let it lie on the ground to serve as mulch. Now, in the plum orchards or apple orchards, or orchards maturing their crops later in the season, we are not obliged to begin the work so early.

We have usually sprayed our cherry trees once or twice in the season. I suppose the cherry requires less attention and is less subject to attack by insect enemies than any other fruit. We have a little trouble with the fungus on our May Duke, but it is not serious. It is not troubling our sour cherries nearly as much. So I think the cherry is perhaps less troubled by insects and fungus than any other variety of fruit we grow.

I believe I have nothing more to offer on this question. I have not experimented largely. I have quite a number of sweet varieties, but have not considered them of sufficient commercial value to pay attention to them, because they are more apt to be troubled with the rot and are not as hardy.

Mr. Ohmer: Did you ever try the Ida?

Mr. Farnsworth: I have a few trees growing, but they are not bearing yet.

Mr. Albaugh: In regard to those varieties that Professor Green spoke of, the Ostheim, the Wragg and the English Morello. We have these three varieties and the only thing we can do is to let them grow a year or two longer in the nursery before they are large enough to sell. We left them until they were four years old and then they had a crop of cherries,—not round but elongated. The trees in the nursery rows were full of those cherries as a bunch of Elderberry stocks would be of elderberries. They were later two or three weeks than the others and we gave up the idea of trying to grow those three varieties in the nursery. The English Morello, the Wragg and Ostheim were all poor growers, and if you wanted to grow them you would have to put them on good soil and let them stand a year longer.

I wonder that somebody didn't say something about the Windsor cherry, which is certainly one of the best and most reliable of the sweet cherries. It is not tender in tree or fruit and is later than the others. Our experience down in that part of Ohio is that the Dye House is not to be "sneezed at" by a long way. We believe it is the best cherry we have. In that heavy clay soil we have different things to contend with than Brother Farnsworth with his May Duke, and it is impossible to raise May

Duke in southern Ohio and not have it winter-kill. There may be places where you could grow it, but in our soil the tree has sap in it and it is very tender, so that even in Ohio we find that location has something to do with it. We have in our part of the state what is known as a "shot-hole borer." It makes a small round hole all over the branches of the tree clear down to the ground, and especially in the branches. What we will have to do for that insect we have not exactly found out.

I fully agree with Brothers Farnsworth and Bear in regard to the value of cherries. We find each year a growing demand for cherries. We have a number of farmers who set out 50 to 200 trees for profit, and one had 20 Dye House trees probably five or six years old as thick in body as a man's wrist or his arm below the elbow, and he sold last year and the year before at $2 a bushel. Their juice is not white like the Early Richmond. It has a red cast, and the cherries do not stick to the stem like the Early Richmond, and while it is not as large as the Early Richmond it bears a full crop and comes early and brings more money in our market than any of the berries. So I believe that no one in Ohio can plant out an orchard of from 50 to 200 trees that will be more profitable than cherry trees.

The President: I would like to ask what would be your choice of three varieties of sour cherries?

Mr. Albaugh: Dye House, Early Richmond and Montmorency; and I would like to plant some Windsor.

Secretary Farnsworth: I am very glad that Mr. Albaugh mentioned the May Duke. We have them on sandy soil and find them quite hardy, but we do not cultivate them very much. The only objection I made to the Dye House is that it comes into our market at a bad season.

Mr. Ohmer: A cherry has been named which seems to be a stranger to most men. It is the Ida. It is a large, handsome sweet cherry and first class. I had probably 15 or 20 ten pound baskets from two trees that I sold for 50 cents a basket, and they went like hot cakes. If I were going to plant cherries I would certainly plant a good many of that variety.

Question: What kind of soil?

Mr. Ohmer: Clay loam.

Q. Early?

A. Yes.

Mr. Moore: Mr. Wise, of Canton, says that someone had made the statement in the Rural New Yorker that the Early Richmond was entirely free from San Jose scale. I see Professor Webster over there and I think he can answer that question.

Professor Webster: Of the cherries I think it comes the nearest to being exempt. We have not found a scale here in Ohio on the Early Richmond cherry. We have found it on the sprigs or shoots that came out of the old stock on which it was grafted very thickly. I found too in one instance that the branches of a pear tree which actually died from the effects of the scale, almost touching the limb of the Early Richmond cherry, and yet we never found a scale on the Early Richmond cherry. I do not like to say it is scale-proof, but we have yet to find it on the Early Richmond.

Mr. Albaugh: Myself and a couple of other nurserymen at the instance of Professor Webster, made a trip last spring into Preble county, to look at an orchard and fruit garden that had been terribly "San Josed." Plums, pears, quinces, apples, peaches and apricots all literally eaten up with the San Jose scale. The gentleman invited us into the house and when we came out I said: "I want to look at your cherry trees." It was in the yard close by. He says "There is no San Jose scale on those" but we went out and put on our glasses. Upon close examination of those cherry trees we did not find any marks of the San Jose scale on those trees.

Mr. Carr: There has been mention made of the Montmorency cherry. I would like to know whether there is a Montmorency and a large Montmorency cherry, and if so, which one they are talking about. I also want to mention Black Tartarian. I saw that on the Lake Shore last season, and I thought I never saw a finer sweet cherry. Some of these gentlemen have mentioned Louis Philippe, and I would like to know why that is not among the good varieties.

Mr. Albaugh: The large Montmorency is cultivated in New York, but it don't flourish except in the sandy soil along the lake. It is like the Governor Wood and others originating near Cleveland. The Ida cherry that Mr. Ohmer mentioned is a success down in our part of the state.

Mr. Woodard: What is the color of the Ida cherry?

Mr. Albaugh: A little like the Governor Wood and very similar to the Yellow Spanish, but not quite so firm and solid. A little pulpier.

Question: How about the Louis Philippe?

Mr. Albaugh: The Louis Philippe doesn't bear, but the cherry is a great big fine cherry. We have a Louis Philippe that does not bear nearly so well as Montmorency and Dye House. It comes in later than the May Duke. It is not called as good as other varieties of sour cherries.

Mr. Bear: I find your instructions say "boil it down." Perhaps I boiled it down a little too hard. There are a great many things I would like to have said. Now, in regard to Montmorency. The large Montmorency is the one I meant; the only sour Montmorency we have. The May Duke that Mr. Farnsworth spoke about would not do us any good. You don't want but a few early cherries. The English Morello is a good cherry for canning. What I want in a cherry is one that when you use it for dessert your children will ask for more. That is my experience with the English Morello properly prepared for the table. Of course it takes plenty of sugar to do that.

Mr. Carr: I have yet on the Lake Shore to find a man who does not say of the large Montmorency just what Mr. Albaugh has said. I have never seen a good crop of the Montmorency. And then as to their ripening unevenly, that makes everyone condemn them, while I can name a number of people who prefer the Louis Philippe.

Mr. Aultfather: I think I will have to say a word in favor of the English Morello. I have ten trees that began to bear the second year after planting, and last year I picked almost two bushels to the tree and sold them at three dollars per bushel. The trees were full this year and every cherry was engaged long before they were turning to get ripe, at $3.20 per bushel. I will say while I am up that I have forty trees of another variety. I bought them of a nursery not far from town, ten trees for May Duke, ten trees for Late Duke, ten for Empress Eugenie and ten trees of another variety. These trees have all proved to be of one kind, ripening at the same time as the Early Richmond and the finest tree I have on the place.

The President: I would like to ask Mr. Carr what kind of soil the Louis Philippe and the Elkhorn grow on.

Mr. Carr: Clay loam; gravelly subsoil.

Mr. Sweet: I would like to ask these gentlemen that have been talking to us about cherries, how they manage the pruning, whether they want any pruning.

Mr. Albaugh: Very little indeed, I should say.

Mr. Aultfather: I would like to ask Professor Webster if the borer that is working on our cherry trees is the same as the peach borer. I saw one side of a tree wilted, and when I examined I found the borers working on the stock that the cherry is budded on. On the English Morello and the Early Richmond trees they are working below the bud.

Professor Webster: I do not know what you have over there.

Mr. Aultfather: They work right around in the bark.

Mr. Albaugh: Were they under the stem?

Mr. Aultfather: Generally below the graft.

Professor Selby: Is it on one or more sides of the tree?

The Secretary: Just let me make the request that those who speak do so plainly that the stenographer may catch every word. You will understand that those who are in this room are a very small proportion of those who will get copies of our report and we want this discussion taken down.

Another word. Somebody inquired about pruning the cherries. They require very little pruning as a rule; and yet we have found that the Early Richmond and that class require a good deal of thinning out while young. Later it is not necessary. I have thought that perhaps there was more of that required in our sandier soil. The trees in the sandy ground don't make quite as high and rank a growth but more bushy.

On our sandier soil we get more of a twig growth than on the heavier soil.

The President: Are you through with the cherry?

Mr. Bear: There is one cherry that has not been mentioned, but it might go in because it is called for, and that is the Olivet. I did not mention it because I don't think it will bear enough fruit. I have five trees that didn't have a half bushel on them but they are large enough to bear three or four bushels.

Secretary Farnsworth: That is my experience.

The President: We will now listen to a paper by Professor Hickman on "Sugar Beet Culture in Ohio."

SUGAR BEET CULTURE IN OHIO.

BY J. FREMONT HICKMAN.

That we may consider the subject of sugar beet culture in Ohio intelligently, it has occurred to me that we must first specify what is meant by the term sugar beet. Does it mean the common cow beet or mangold wurtzel? Does it mean the beet that grows in our gardens? or is it a special kind grown purposely for the production of sugar? Gathering all available evidence and summarizing the views of the best authorities we are confronted with but one conclusion; that it is but a sport of the common beet, but that selection and cultivation have developed in this particular sport a high percentage of saccharine matter. So that the name once applied simply to indicate a slight degree of sweetness now signifies that this vegetable has a specific and fixed place in the vegetable kingdom, and bids fair to be the means of enlarging the agricultural and manufacturing interests of both the old and the new world.

The Department of Agriculture, at Washington, has been investigating with more than usual interest, the subject of sugar beet culture in the United States, and has already determined many valuable points bearing upon the production and probable income from the introduction of what promises to be one among the greatest industries of our country. The rapid progress made and the success obtained on the great Pacific slope in this new field of vegetable production has caused our more conservative eastern agriculturist to not only inquire into the merits of sugar beets as a money crop, but also to want to try his hand in cultivating them. Some of the more visionary have built great air castles and have proposed to grow the beets and make the sugar and place it upon the market as a finished farm product.

But the farmers of America, as is the case with those of Europe, in respect to the sugar beet industry, must be satisfied with acquiring sufficient agricultural skill to produce a crop of beets with a paying tonnage and a sufficiently high content of sugar to justify a continuance in the business.

Granting then that our work is one of growing the beets, we will give a few suggestions as to the details of the work.

Kind of work. In my experience I have found that beets, like almost every other crop, will follow some things better than others; to this end I believe the best preparation is a clover sod. While this is true, it is a noteworthy fact that any land that will produce a good corn or a good potato crop will produce a good yield of beets. But, as might be expected, an open gravelly soil will produce a greater tonnage than a stiff clay, in fact the latter is perhaps one of the poorest of beet soils, for the reason that the roots do not readily penetrate the stiffer clay sub-soil.

As with all root crops, perfect drainage, either natural or artificial, is an absolute necessity to the production of a beet containing a high per cent. of sugar with the requisite degree of purity. If it is possible to have these two requisites then add a third; namely, a soil as nearly free from weeds as possible. With these three things, other conditions and care being normal, a fair crop of standard quality is reasonably certain. It is claimed that barnyard manure should not in any case be applied immediately before planting, but should be put on during the fall before Highly nitrogenous fertilizers should not be used, but a small per cent. of nitrogen with a high per cent. of phosphoric acid and potash are found from a theoretical standpoint highly recommended. The argument against the use of the nitrogenous fertilizers is based upon the fact that they tend to prolong the growing season of the plant, and in our soil and climate the addition of something to hasten maturity would serve a better purpose, as we shall find later on.

In applying yard or stall manures, less trouble will be encountered if it is well rotted, and in no case put in piles on the field—I regard this bad practice in any case, but especially so when a crop of sugar beets is to follow the application. Sixteen tons per acre, I would regard as the extreme limit in applying yard manure. The too free use of such manure is apt to produce overgrowth in the beets, which makes them ill suited to manufacture of sugar. If applied in an unrotted condition, it will certainly seriously injure the crop in case of dry weather. The nitrogenous manures tend to produce a very heavy and large growth of the beet and thus to diminish its content of sugar. Dr. Wiley says, "The quality of a beet may be impaired, even with little or no diminution of the sugar content, by reason of the increase of the percentage of non-sugars present."

The real purity of the beet is also to be distinguished from the apparent purity of the juice. The real purity of the beets is obtained by dividing the percentage of sugar in the beet by the total solid matter in solution therein; the apparent purity of the juice by dividing the percentage of sugar therein, by the apparent percentage of solids, as indicated by the specific gravity.

On general principles, I think best to avoid fall plowing as much as possible, but expert sugar beet growers recommend manuring in the fall and plowing at once, and if I am not misinformed it is the practice in European countries, and in many instances it is stipulated in articles of agreement between landlord and tenants, that lands to be plowed for root crops shall be manured and plowed the preceding fall.

The ideal sugar beet cannot be grown on our thinner lands with only such preparation as is given for corn and potatoes. The deeper root growth requires a greater depth of soil, and can be secured only by plowing ten to twelve or even more inches deep, or perhaps by subsoiling. The latter method on most Ohio soils will best reach the desired end, namely, a soil sufficiently deep and loose to permit the beet to grow down into, rather than to be pushed up out of and grow on top of the soil. After thorough plowing, the sugar beet grower is not and will not be satisfied with a poorly prepared seed-bed, but will work at it with tillage implements until the surface is as fine and free from clods as time, patience, endurance and long suffering will work out. The final stirring should be given as short a time before planting as is consistent with the means and men at hand, the object of which is to kill as many as possible of the weeds that may have started, for it will be fully fourteen days after planting before the beets will begin to show through the ground, and during this time, unless the ground is comparatively free from them, more weeds than beets will have started. The ground is most quickly marked with a sled having about six runners, making six rows at each crossing; the rows to be made as close as they can be worked with a horse. Opinion will differ as to the distance this will be; they will not be too close if made twenty-four inches apart, and more beets and better quality will be produced if they can be cultivated in rows twenty inches apart. The seed should be either the white Improved Vilmorin or the Kleinwanzlebener. There are other good varieties, but the two above mentioned are regarded among the best varieties grown. Another essential is that the seed should be fresh, as old seed is sometimes worthless almost, and seldom if ever possesses the vitality of new seed. The planting may be done either by hand or by a garden seed drill, such as is used for planting onions, parsnips and other small seeds. More seed will be required if planted by drill than if put in by hand. From six to seven pounds per acre if hand planted, and from eleven to twelve if put in with drill. It should be put in from one-half to one and a half inches deep, eight inches apart in the row if planted by hand, but if put in with a drill, more closely together. With either method of planting, some pressure to compact the earth about the seed is considered helpful. In hand planting this may be done with the foot, and if planted with the drill a roller should follow. From the peculiar structure of the seed, considerable moisture is required to start a germination. The compacting of the soil starts and hastens absorption of moisture, causing a quicker development of the germ.

The time to plant is just as early in the spring as all danger of freezing is over; this often is as early as the middle of April, and they may be planted with a reasonable assurance of a crop as late as the middle of May. Three things are sought after in this crop, each of these three points are of vital importance. They are, a big crop in bulk, maturity, and a high per cent. of sugar, and these three things all hinge on the point of early planting. Time is required to give size, age to secure maturity, and both time and age to develop sweetness. The beet is a plant native to much colder latitudes than ours, and will germinate and grow in temperatures where corn would do nothing, and for this reason may be planted before rather than after the corn planting season.

Should the ground for any reason become crusted after planting, it will be necessary to break it by some means, for the beet plant is not sufficiently strong to force its way through. Just as soon us the beet plants are through the ground sufficiently to be seen along the row, a cultivator should be run through to kill all weeds possible without disturbing the plants. As early as consistent, the beets should be thinned to an average distance of eight inches apart in the rows. This may be done either by hand or with a three-cornered hoe, or with a small four-inch hoe of the ordinary shape. If it is found impracticable to remove all weeds with the small hoes, some hand work will be necessary, but the less manual labor of this kind required, the more profit in growing sugar beets, for this is the tedious and expensive part of sugar beet culture. If it is a necessity, and boy labor can be secured, it will in a measure reduce the cost. In the older countries of Germany and France women and children do a large share of this work, curtailing materially the cost of culture. One weeding thoroughly done ought to suffice and the latter cultivation should be level and can be done with some of the surface cultivators recently put upon the market by S. L. Allen & Co., of Philadelphia The Moline Plow Co., and the Deere Mansure Co., of Moline, Ill. If the stand at the first weeding is found to be very imperfect, transplanting may be resorted to; taking up where too thick and placing them where the stand is insufficient. In transplanting, a hole should be made with a sharp, round stock, and after placing the plant, press the dirt close to it, not only at the crown but as far down as possible This should be done while the plants are quite small. It is not recommended to transplant except in extreme cases, for the reason that the transplanted beet will be less perfect. They will be irregular in form, and instead of showing a straight and perfect root, will perhaps bear two or three prongs or branch roots. The crop should have tillage at least once each week, until the leaves have grown sufficiently to almost shade the ground, and it is not good husbandry to cultivate when the work will disturb or destroy the leaves. During cultivation no dirt should be thrown up to the plant, except it be found forcing its way above the surface and growing above ground, in which case those so exposed should be covered if possible, for the reason that the part of the beet grown above ground detracts from the value of the entire crop on account of it being less rich in sugar, and the exposed part, like a potato grown partly out of ground, is of a green color which stains the juice and imposes on the manufacturer extra labor in purifying.

One thing to be borne in mind in growing sugar beets is that they are benefited by growing close together and by abundance of sunshine, the latter not necessary on the beet but upon the foliage. This fact has been pretty well determined, that beets growing widely separated, produce less sugar than those grown more densely, and that beets grown in the shade are not so rich in saccharine matter as those grown in the open field with exposed condition. It generally applies also that beets grown on high ground are of better quality than those grown on low lands.

This may be in part due to another well defined fact, namely, that large beets are less rich in sugar than small or medium sized ones.

If the beet seed is planted early, the cultivation of the crop should be almost if not entirely out of the way before harvest time, and the field require but little attention until the season for gathering the crop, which, in our latitude, should be during the month of October. Let me again urge at this point the necessity of early planting for the reason that green beets delivered at the factory will certainly not bring as much per ton as mature or ripe ones. Ripe beets may be easily distinguishable from the greener ones by the color of the leaves, which in the immature beet is a dense dark green, while the riper ones first show a pale green then a yellow color. This, however, is seldom true of all the leaves of the beet, and we are not justified in waiting until all have shown the yellow complexion. Frosts do not injure the beet so long as freezing does not occur, but they should not be left in the ground long enough to incur any risks on this point, neither should any risk of second growth be taken. Of two evils, it will be better to pull beets a little green than to allow them to make any advance in a second growth. Either of these conditions decrease the value by reducing the sugar content. Harvesting the crop is by no means a small job, but may be likened to the digging of a crop of potatoes by the hoe or fork method. There is however, an implement made for lifting them out of the ground, which is said to work with considerable speed and accuracy when the rows are absolutely straight. In addition to getting them out of the ground, there is the work of topping; this can be best done with a sharp butcher knife, and should include leaves and a small portion of the crown. Dr. Wiley says the object of removing this portion of the beet is to prevent the mineral salts, which have accumulated in large quantities therein, from entering the factory. These mineral salts exercise a very deleterious influence on the crystalization of the sugar, and should therefore be removed. These tops with the leaves are more valuable for fertilizing than for any other purpose, and leaving them on the field will be more profitable than carting them off. Chemical analysis discloses the information that the beet leaves contain more than double as much fertilizing material as the beets when taken pound for pound. After removing the top, the beets may be thrown in piles and covered with leaves or with straw to protect them from the sun and from frosts or freezing until they can be hauled to the factory.

Having given in detail the methods employed in producing the crop, this paper would not be complete without some idea of the cost of all the work and cash outlay in raising the beets. I do not have an itemized account of the cost of growing an acre of sugar beets, but have the next nearest thing, namely, the actual cost of growing an acre of mangold wurtzels, which I give as follows: I find in my records of 1890 the following account with an acre of cow beets or mangolds:

Preparation of land	$ 4 00
Seed	1 20
Cultivation, including hand weeding	15 40
Harvesting and storing	10 76
Total	$31 36

In 1891 a similar account shows the following:

Preparation of land	$ 7 44
Seed	1 20
Cultivation	17 83
Harvesting and storing	12 32
Total	$38 84

I think the above figures pretty high, and must not fail to call attention to the fact that labor on the above was charged at the rate of thirty cents an hour for man and team, and manual labor, when alone was at the rate of $1.25 and $1.50 per day. By using cheaper help and charging less for teams, I believe it is possible to produce sugar beets at a cost of from $28.00 to $32.00 per acre. It must be remembered that nearly all of this expense is for labor, and in many instances this can be furnished by the farmer's family, in which case it will give employment to many unemployed and will make a handsome income from a comparatively small area of land. The weeding, thinning and hoeing of beets are all operations requiring only ordinary skill and may be engaged in by members of a family that would otherwise be idle.

Regarding yields per acre, enough is known to indicate something of our possibilities. The average yield in France for 1895 was 10.6 tons; in Germany for 1894, 11 tons; 1895, 13 tons; and in 1896, 12 tons. Austria's average for 1895 was 10 tons. The Chino Co., of California, produced in 1896, an average of 14 tons. If we were to take the estimates of some of those who have sent samples to the Station this fall, we would not need to have any fears on this score. More than five hundred samples have been sent to our laboratory for analysis, and each one sending sample is requested to give an estimate of the amount he could possibly raise per acre. These estimates range from three or four tons per acre up to as high as forty. The more conservative, however, estimate a possible yield of from ten to sixteen and even twenty tons per acre. Now, if Ohio could reach the average of these estimates say about twelve tons to fourteen tons per acre and could sell these beets at $4.00 to $4.50 per ton, it would assure a fair margin of profit, and in my judgment this is possible.

Secretary Wilson in his recent report says that the department of agriculture distributed seven tons of imported sugar beet seed last spring in twenty-seven states among 22,000 farmers. Its chemical department is analyzing 6,000 samples from these fields of beets. It is also making special inquiry into the composition of the beets grown from high grade seeds under different conditions of soil and climate.

In a recent number of the *American Agriculturist* we find the following interesting data. The Pennsylvania Station has analyzed thirty-nine samples of sugar beets and expects many more. The highest per cent. of sugar in the juice has shown 17.54, and the lowest 6.85. The average may probably be stated as somewhat between 12 and 15 per cent. In Kentucky comparatively few sugar beets were raised the past season. In 1898, a thorough that of the crop will be made in every county under direction of the Experiment Sta tion. Director Scovil, of Lexington, writes "Up to the present time, results of analyses of sugar beets raised in this state do, not justify us in recommending the erection of factories."

At the Missouri Station, 250 samples have been analyzed, covering nearly every county in the state. A little over 40 per cent. of the samples thus far analyzed have shown 12 per cent. or more of sugar content. The Iowa Station has tested over 900 samples, with a lot more to come. Chemist Weems says, "There is no reason why Iowa farmers cannot raise sugar beets containing 12 per cent. sugar with a purity of 80 per cent., where care and attention are given to them. Over 400 samples have been analyzed at the Illinois Station. The results are not yet available for publication, but Prof. Hopkins, the chemist, states that where the proper conditions have been observed and maintained, they have obtained satisfactory results. At the Kansas Station, 246 samples have been analyzed. The highest percentage observed was 15.52 with a purity of 79.5. The lowest percentage, 9.75 with a purity of seventy-six.

The Ohio Station has analyzed nearly 600 samples, showing perhaps as wide a variation in per cent. of sugar as any of the above, but in the main, results are quite as good as could have been expected, and if the results of this season's trials are a fair criterion of the ability of Ohio's soil to produce sugar beets containing a high percentage of sugar with a sufficient degree of purity, some sections of Ohio, at least, may be said to stand at the front, and if any of the states can grow sugar beets, Ohio will as surely gain that reputation as any of them. In this connection, I want to call special attention to the fact that the past season has given us some of the most favorable conditions for a high per cent. of sugar. The best authorities on sugar beet growing agree that plenty of moisture for the first two or three months after planting is a potent factor in securing tonnage. In the later months, clear weather with less rainfall augur the maximum percentage of sugar and a high degree of purity. These conditions certainly were attained during the past summer in almost all sections of Ohio. Reasoning from this standpoint, it seems to me that prudence and conservatism suggest that it would be unwise for the people of Ohio to undertake to grow areas of beets without a second year's trial in growing for quality, before attempting to secure expensive factories, and undertaking to supply one or more of these factories with sufficient beets to insure a good working season. While the production of the beet with the desired sugar content and necessary degree of purity ends the labors of the agriculturist, he must not lose sight of the manufacturer's interest, and that is that the average sugar beet factory does not receive and work beets more than three months out of twelve. For the beet, like almost every farm produce, is susceptible to change, and unfortunately one among the first changes in the beet effects the saccharine matter and causes a deterioration in its value. This may follow exposure to the sun, which changes the color. The presence of heat wilts the root. Heating, if piled deep in a room, causes changes in sugar.

Few of us realized the enormous expenditure necessary to build and equip a beet sugar factory. Many are built at a cost of $200,000 and upwards; few are built and equipped for much less. The one built recently in Wisconsin cost about $160,000 and has a capacity of 275 tons of beets per day of twenty-four hours. It seems unfortunate that beet sugar factories cannot be built on a small scale, but experience of all beet countries shows that this is simply out of the question. Small factories for making sugar, like small institutions of any other class, are soon forced to suspend on account of the fierce struggle for supremacy.

The number of factories in operation in Germany during 1895-96 was 379; quantity of beets used, 11,672,816 tons; acres cultivated, 930,372, or 2,343 acres to each factory. Price paid for beets, $4.64 per ton.

Number of factories in France in operation in 1895 96 was 356; quantity of beets used, 5,411,484 tons; acres cultivated, 405,852, or 1,140 acres for each factory.

Number of factories in Austria in 1895–96 was 216; quantity of beets used, 5,760,000 tons; number of factories in Russia in 1895–96, 277; quantity of beets used, 5,311,888 tons.

After reading and considering the above figures, I foresee that it will be necessary to interest a goodly number of farmers in any one locality, before it will be possible to induce capitalists to invest in and establish a factory. It will be necessary for a large number of men to agree to furnish, for a series of years, beets in considerable quantities. To those who have had experience in these lines, this is no little task. The sugar beet at Lehi, Utah, started in 1891 with 1,500 acres, and had increased this number in 1895 to 3,300.

The factory at Chino, California, started in 1891 with 1,800 acres, and had increased this number in 1895 to 7,529 acres. These figures indicate that those who started with the factory in the beet business enlarged their acreages very rapidly, or that their neighbors followed their example very quickly.

I cannot see, at the present time, that any section of Ohio is quite ready for a factory; but I do see that if our farmers choose to do so, they can be ready within one year, and if they set themselves for it, can have two or three, or even more, beet sugar factories in operation within the next two years.

The foundation work, however, must be done by the farmer not in endeavoring to secure the factory, but setting himself about to see if he can grow sugar beets of the desired quality, and if he can induce enough of his neighbors to go into it to produce enough to guarantee the delivery of the beet crop from thousands of acres to a factory. Just as soon as these things are done, the fellows to do the other part will not have to be hunted up, but will be on the ground and will know almost as soon as the farmers that the beets can be produced and delivered in quantity and quality desired.

What is wanted to insure successful beet culture in Ohio is not money with which to build and equip factories, but men to guarantee that the beets will be grown to keep them running if they are built. The indications and evidences thus far given go to show that Ohio has the soil; that Ohio is within the isothermal lines that indicate the belt known as the beet zone. The only thing lacking is a knowledge of how to produce the beets and enough men of one mind to grow and deliver the raw material at the factory. Capital will do the balance, and instead of sending out of this country more than a million dollars each and every year for sugar, we will be distributing that amount among our rural population, a goodly share of which will be Ohio's portion as a result of the introduction of the sugar beet industry.

Professor Hickman: (Continuing) Now, if the soil is what it should be there is nothing to prevent it from growing down into the ground. Here is one (Indicating) that illustrates the transplanted beet, in the ground that was so hard that it started three roots in the place of one and they have been crooked around with the soil which make them shorter.

Mr. Rehl: What is the objection to that beet for manufacturing purposes?

Professor Hickman: That beet will not be found as good as this one. (Referring to one with single root.) The imperfect beet is not nearly so good in sugar.

Mr. Baum: Our society has attempted to prove that we can grow the sugar beet. I shall not attempt to go into detail in regard to this paper, but I wish to give one word of warning. We got our seed from Omaha, Nebraska,—the pure seed—and that is an item if you wish to be successful. We purchased it and paid our own money for it. The seed we had donated to us I presume was furnished by the government, but we have four or five varieties grown on our trial place. Let me say to you that I do not believe it policy for the sugar grower to attempt to make a success by taking donations for his seed. That is all I have to say at present.

Professor Selby: I feel like we might mention two or three things here in the way of supplemental observation that would be of some value, and these are based not upon experience in growing sugar beets, but upon observation of sugar beet samples that came to the laboratory. That is the way all growers of beets must judge the beets. The ideal of size and yield must give away to ideal of form, sugar-content and purity. Now with all my writing over and over and over again to a single man collecting samples in the south, I never got a dozen samples until I finally said that he could not grow perfect beets. They would send beets probably this size, (a large one) but that is the finest one of that size I have seen this season. Commonly the beets would taper half the length, half grown out of the ground, and nothing has stood so much in the way of a good showing in Ohio in the matter of sugar beets this year as inability to teach growers to sample the beets. This (indicating) is perhaps a very close approximation to an ideal sugar beet, one that doesn't grow out of the ground, one that is conical and of good length, a beet weighing about two pounds. When the weight runs up high and the beet is over-size they are not so good. I do not believe any other one thing has stood so much in the way of samples. In Mr. Baum's association they got the ideal sugar beet to start with and from there we have hardly got a bad sample.

Mr. Pierce: Didn't the seed make a difference?

Professor Selby: These samples came from the same lot of seed probably that the other samples over the state came from.

Mr. Pierce: That sample you speak of?

Professor Selby: The sample from Creston. It is in the growing of the beets, to keep them down in the ground, and then in sampling to select a typical beet.

Mr. Pierce: But those go into the general average if the whole business is manufactured.

Professor Selby: True, but they will have to learn to grow better beets. Professor Hickman has brought out the point of having the ground deep enough, and you can see that to grow a beet of this length there must be a depth of soil.

We have analyzed more sugar beets from this county than from any other county in Ohio, and without going into details on the averages, I might say that all of these samples from Wayne county, beginning with

September 20th and coming down to date have an average sugar content of about 14 per cent. and an average purity of about 79 per cent. I think that result is exceptionally favorable. This includes 82 samples. This was made up by Mr. Bloomfield to-day from the records.

A good many questions are coming up all the time on this matter of sampling and growing beets, but I think I have touched upon what appears to me to have been the chief error this year and the chief source of trouble. Beets must be grown somewhat closely together, to keep the size down. The sugar content is better, and if beets are grown for beet sugar factories they will be grown under directions, and those directions will necessitate that they be kept down. Beets of large size are not looked upon with favor at the sugar factories.

The President: This closes the program as laid down on our schedule for this afternoon. It has been suggested by the business committee that we take up some of the ad interim reports at the present time. Before doing so, however, I would like to announce three committees to examine the exhibits, and the chairmen of these committees will be a committee to examine implements and other exhibits not classed on the program.

Committee on Fruit:
Albert Hale,
N. H. Albaugh,
W. H. Owen.

Committee on Vegetables:
W. N. Tracey,
A. W. Livingston,
C. L. Whitney.

Committee on Flowers:
F. E. Carr,
J. D. Imlay,
G. N. Carruthers.

Mr. Ohmer: In as much as we are going to remain here let us have as little recess as possible.

The President: The meeting will be called to order at 6:30 standard, this evening.

Mr. Scarff: And at 8:30 to-morrow morning.

The President: We will now take up the ad interim reports and will listen to Mr. Shirer, the member from the second district.

AD INTERIM REPORT FOR THIRD DISTRICT.

By A. Shirer.

CRIMSON CLOVER.

Crimson clover was a good crop. In fact, the first time that it gave general satisfaction. Very little was sown last fall on account of heat and drouth.

ASPARAGUS.

Many of our fruit growers are beginning to cultivate this vegetable. No report of any destructive insect or disease. The crop of '97 was rather light. Prices good. Your committee noticed that there is quite a difference of opinion to the distance asparagus should be planted. Also the manner of cultivation varies considerably. One gardener killed his newly set plants by applying too much salt.

POTATOES.

Real early and very late potatoes a fair yield. The balance almost a failure on account of the blight. No spraying for this disease as far as I know. The Early Ohio still a leading variety.

CABBAGE.

Early cabbage a good crop. Prices fair. Late cabbage almost a total failure on account of the drouth. The growth of some of the early cabbage patches was very uneven. No doubt the club root was present.

TOMATOES.

The tomato crop from early to late was unsatisfactory. Blight, black rot and sun scald were the destructive agencies at work. Prices very good except for those who made contracts with canning factories. Our early market demands a purple tomato.

MELONS.

Again the nutmeg melon crop was very disappointing. The plants, after the frosty morning in the fore part of June, made a good growth and all indications pointed towards a heavy yield, but suddenly after, some patches were literally covered with nearly full grown melons, the leaf spot rust appeared and changed the prospective income in some instances to a total failure. There were a few patches here and there where the leaf spot rust did very little injury. Also in some patches the melons were about ripe when the disease appeared, and they produced a fair crop of good melons.

On account of the vines dying early, many melons of inferior quality were pushed upon the market.

A leaf fungus-disease also played havoc with the pickle vines. Nothing was applied to check it.

CROSSES.

At our last meeting we had a discussion about the crossing of watermelons and pumpkins. We, ourselves, planted this year watermelons, nutmeg, cucumber and pumpkins in such close proximity that the vines interlaced. We saved some watermelon seed of this mixture for next year's planting. We did see, however, this year a living specimen which seems to be a cross between a watermelon and pumpkin or squash. The outside of the melon has the appearance of a pumpkin while the inside is a red core watermelon with white seed.

STRAWBERRIES.

The strawberries in 1896 entered winter quarters in a healthy condition. They were prepared to meet the adverse weather we had during the spring. We had several destructive freezes and frosts. Rust became very prevalent. For the time being the outlook became discouraging, finally we had the very best of strawberry weather and the half dead plants took on new vigor. The outcome was, we had one of the largest average yield per acre. Hundreds of bushels in Montgomery county were never picked. Prices ruinously low. Good strawberries retailing in the Dayton market, two quarts for a nickel. Some growers did not realize enough to pay for picking, crates and commission. Shipping berries to distant market is becoming very unprofitable to producer but returns a handsome income to the express companies.

The past season nearly all varieties did well. The Warfield where properly grown did exceedingly well.

The Haverland too is becoming a better market berry, gradually losing its objectionable features. The number of varieties for commercial growing are no longer limited. There are entirely too many large pale, soft berries grown. There was an unusual demand in our market for a dark berry, like the Wilson.

NEW VARIETIES.

Finally the Montgomery county Horticultural Society does something else than merely talk. Some of her members originated the very best of the new varieties. John F. Beaver, an amateur grower, is yearly producing new seedlings. The one named Nick Ohmer is worthy of trial. Beaver's No. 9 is a typical commercial berry. Mr. Fred Hochwalt, a commercial grower, has numerous seedlings. I purposely deferred visiting his grounds until the third week of picking, but even that late in the season his plantation was still lying full of berries of very large size. The Staples is a very early berry. The Dayton in some localities is doing poorly. Both Mr. Beaver and Mr. Hochwalt are practicing intense culture. The Staples was produced under ordinary culture.

RASPBERRIES

Were an inferior crop. The fruit generally small and of poor quality. The cold wet weather at blooming time injured the crop. The Blackcap is still the leading variety in our market. Growers are still asking each other the question which is the best red variety. Shaffer is the leading purple. Some have planted the Columbia. Prices the past season were fair.

BLACKBERRIES.

Perhaps never in the history of blackberry culture were the canes of all varieties loaded with fruit as the past season. A hot, dry spell just before ripening reduced the total amount considerably. Prices very low.

CURRANTS AND GOOSEBERRIES

Were greatly injured by the spring frosts. The best crop of currants that I have seen the past season was in a pear orchard. This currant patch gets an annual application of the best of stable manure. The prices for 1897 were good.

GRAPES.

Many bunches wilted on the vines on account of the anthracnose and the excessively hot and dry weather. Prices very unsatisfactory. One grower, however, of choice grapes—red, white and black—received fifteen cents, wholesale, for four pound baskets. The bulk of the crop did not bring one-fourth this amount. Car-load after car-load were shipped to our market and retailed at ten cents for ten pound basket.

TREE FRUITS.

All kinds of tree fruit were more or less of a failure. Cold, wet weather at blooming time was the chief cause. Occasionally an apple orchard had a fair yield. The extreme hot weather in August and September injured the fruit considerably. Prices for all kind of tree fruits were very satisfactory.

ORNAMENTAL PLANTING.

The desire for the beautiful is annually increasing. Not that many expensive lawns are laid out but flowers and shrubs are finding their way into yards hitherto destitute of the beautiful. Some effort is made at tree planting along the public roads. In some localities the most contemptible objects are the miserable conditions of our public highways. Some districts have smooth, even roads, while the adjacent supervisor—and perchance a horticulturist—makes roads especially to settle the berries while taken to market. The horticulturist needs good roads infinitely more than the general farmer. Why are we slumbering and let the League of American Wheelmen dictate how the roads shall be maintained?

FUTURE PROSPECTS.

The strawberries are not in the best condition on account of the rust, leaf roller, root louse and severe drouth during the fall. Raspberries and blackberries promising. Currants as usual shed their foliage prematurely. Vineyards in good condition. All kind of trees—except some pears and quinces—in a healthy condition The indications as a whole for the coming year is favorable.

For future prices you must consult the political prophets.

We made an unsuccessful effort to organize Societies in Preble, Butler and Hamilton counties. We were present at the October meeting at the Greene county Society.

This virtually ends my report for the district including Cincinnati, Hamilton, Middletown, Dayton, Xenia and Wilmington. It is more of a county than a district report. But how is your committee going to mend matters? I wrote to our own worthy Secretary for a list of societies in my district. He too did not know. Mr. President, you are fully aware what kind of a document a report is that contains only I and mine. Such reports are often very pleasing upon paper but when the practical horticulturist appears upon a tour of inspection the beautiful I and mine has reverted into thorns and thistles. And that is the reason the good wife sometimes receives instructions to tell Mr. Visitor: "I am not at home." Your committee, Mr. Chairman, realizes that there is something radically wrong in the administration of the Ohio State Horticultural Society. There seems to be no vital union between the state and local societies. Your committee is handicapped at every effort to obtain a reliable report. What a brazen countenance it requires to go to an individual and get all the facts you want, and then tell him if he sends a dollar to the Secretary, he can get a printed report of what he said. Your committee would suggest that all local organizations by paying the sum of five dollars, shall be considered members of the State Society. And further that the Secretary shall send as many reports to these several societies as each one has members. I am satisfied if this plan would be adopted, we might obtain reliable information which would be an honor to the state of Ohio, and return at least a partial value for the state appropriation.

I am sorry to report, Mr. Chairman, that a goodly number look upon this Society as an organization for selfish purposes. The question may well be asked, are we carrying out the original intention of the state appropriation? Perhaps the railroad managers were correct after all when they said: "We were neither political, religious nor educational." "Do men light a candle and put it under a bushel?"

The President: It has been the custom until perhaps the last two meetings to discuss each ad interim report as read, and it seems to me that it would be quite proper to discuss this paper at this time.

The Secretary: There is probably no one question in connection with the work of the State Horticultural Society, that has occupied its attention more closely than this same relation which Mr. Shirer speaks of between the state and local societies. We have made more efforts in that direction than in any other. We have allowed each society which showed sufficient interest in the state society to have ten of its members belong to this society, to send a delegate to our annual meeting at the expense of the state society. We have paid the expense of the ad interim committeemen to attempt to organize these local societies and visit with them, and I hardly see how we can do any more. We have attempted to organize and have organized a great many new societies. We can invite the people to come and meet with us, but we cannot go out and force them to come.

Now, the charge that this society is run for selfish purposes is rather a peculiar one. We might make that charge of each and every organization under the sun. We do come here for selfish purposes. We come here to learn how to grow better crops and to sell them to better advantages, to make our homes pleasanter and more comfortable and we also come here to disseminate this information. I say that the horticulturist to-day is the most unselfish man in existence. What other organization is there whose members will come to a convention and freely tell what they have spent a lifetime to study out and have it printed in our reports almost for the asking? I tell you there is no other organization in the state with the possible exception of the agricultural convention, which is closely connected with us, that is so unselfish. Do the druggists and the grocers and other houses of different branches give their secrets freely to the world and publish them broadcast in the papers? And while I am willing to acknowledge that we have a selfish interest here we are not so selfish but what we are willing and anxious to impart to our brethren, the information we have discovered the last year in the method of combating insects, and the better method of culture or packing and selling or of a new variety that is more successful, we impart it freely.

Now, I am glad of criticisms when they are made in a friendly spirit and I wish that all of you would look at these matters carefully. If we could get all to act and build up a close relation between the societies we could accomplish a great deal more.

A member: Some of the members of our organization have talked about that matter and believe it to be a good thing to do. But we are here to learn. One thing in particular just read meets my approval and it is this: Each organization of the county pay in five dollars and then the members that are enrolled in that society are entitled to the benefits of the State Horticultural Society. I belong to the National Sugar Beet Society and each member pays five dollars for his membership in that association; and I know some of our members are willing to pay in their dollar and become members of this society. Just give us a plan how to do it.

The Secretary: We don't even ask a certificate of good moral character. [Laughter]. I might say further that I have made an effort to send reports to the secretaries of all societies whose addresses I could get, but after we have sent one or two copies we don't feel like continuing that. You understand that these reports are printed at the expense of the society at present. Our dollars go towards printing these reports and we hardly feel that we can send them broadcast to those who don't pay for them. And I would like to call your attention just now to the request I made on the program, that you give me a list of all presidents and secretaries of your local societies.

Mr. Aultfather: Some time ago I made inquiry in regard to the horticultural society in Wayne county, and I understood that there were already two farmers' clubs working very nearly upon the same plan, and, probably better not add another society; so I have been letting the matter rest on this account. There was no society in Ashland or Coshocton county, but last weeek I received word that there is one in each place.

Mr. Carruthers: I do not know whether in Lorain county we have an ad interim committeeman to look after us or not. We have organized a society, but I do not know anything about its relation to this State Board. We organized on "our own hook" and have quite a fair meeting once a quarter, and I came down here to learn something more. I made five railroad connections in seventy-five miles to get here. I didn't know whether it would pay, but since I have been here I have already been repaid. I did not come as a delegate, but came self-appointed and shall report to our folks what you are doing. I am not well enough acquainted to criticize, but if we have an ad interim committeeman up in Lorain county to look after us we would like to know it and have him help us to get on the track.

The Secretary: We have realized that there is a great field of work that we are unable to properly occupy, and I think our treasurer realizes that, and is striving to secure more means for the ad interim committeemen. There are, as Mr. Carruthers has stated, a great many localities where effective work could be done to aid local societies and build up the state society; but these ad interim committeemen are busy men, and if they donate their time, we have no right to ask that they bear their own expenses, and we hope in the near future to have more means to use in this kind of work.

Mr. Shirer: I intend to make a motion some time to-morrow, that, if the local societies pay a fee of five dollars, we take them in on probation. We will be Methodists for a while, and if necessary, amend the constitution. I mean the local societies in the county, no matter how many members, if they pay five dollars they shall be considered members of the state society. If there is anybody else that don't see fit to come in with the local society he can pay his dollar in here. You see that will be a means of increasing local interest and interest here. I have talked with the societies in several counties and they have all sanctioned it, and the secretary of our society said five dollars is too small a sum. Of course if there are any societies rich enough to pay ten dollars we will not refuse it.

Mr. Ohmer: Financially that would be a failure to the state society.

Mr. Shirer: Why so?

Mr. Ohmer: I could talk for hours on that but I do not want to take up the time of the society.

The President: We better not discuss it now.

The President: We will now take up the third ad interim report by Mr. Miller.

AD INTERIM REPORT FOR FOURTH DISTRICT

By Wm. Miller.

The Constitution of this society declares it to be the duty of the Ad Interim Committee "To observe and take notes of new and rare fruits, the fruit crops, and other matters of interest to the Society during the season, and report the same at the annual meeting." The new and rare failed altogether in the Fourth District this year. The old and the common in many instances this year became rare, so my report must relate mostly to "other matters of interest."

In a paper read at the last annual meeting of this Society, the writer alluded to the exceptionally favorable climatic conditions, enjoyed by our locality for peach growing. By some mistake, climate belonging to some other locality, seems to have been substituted for ours for two days on Jan. 24th and 25th. The peach buds were not prepared for the Klondike breezes which came down upon them during those two days, and all were killed. The same cold period also killed Japan Plums, Apricots, Sweet Cherries and materially thinned Pears and European Plums. This cold wave seemed to come from the north, crossing Ohio leaving the fruit crops both east and west with comparatively little injury. We trust that hereafter these cold waves will keep in their normal courses, and not get crosswise because of our boasting.

Apples gave promise at blossoming time of plentiful harvest. Those who put away the sprayer because there had been but little use for it the year before, were soon beset with all the plagues of the catalogue. Scab caused many varieties to drop their fruit early in the season, and still clings to the outside of the few defective specimens harvested. The Codling moth worm bored the inside to the core, wallowed around for awhile and joined the scab on the outside. Together they welcomed the unusually hot October weather, and all three gave the finishing touches to the apple crop of 1897. Those who sprayed *early*, *often* and *thoroughly*, had good crops of nice fruit. Abundant scab upon the foliage, has left the trees of many varieties in poor condition for a crop next year.

The pears left by the cold wave did fairly well, and met a better market than the previous year. It is our experience that the enemies which beset this fruit are easier to control than those which attack either apple, peach or plum.

The plum crop was influenced more by the age, previous crops and treatment of the trees, than by the weather conditions. Plum curculio was so abundant as to shake the faith of those who hope to control them by spraying with arsenites. Plum rot (Monilia Fructigena) was very prevalent, and destroyed more bushels of plums than were sent to market. In some orchards not more than ten per cent. were fit for market. How to prevent this loss is without doubt the most serious problem confronting the plum grower. Spraying with Bordeaux and later in the season with Copper Carbonate, promises good results, and another year will find many of the larger growers adopting Prof. Selby's suggestions. In my last annual report I mentioned the fact that the Shot Hole fungus had injured the foliage on many unsprayed trees. Another chapter should now be added to that report. Where young trees were thus defoliated, and the late rains caused a fresh growth in autumn, the severe winter killed many trees outright, and did permanent injury to many more. We will soon have to add a letter to the scriptural injunction and "Spray without ceasing." Several vineyards had their fruit almost wholly ruined just previous to harvesting time, by a worm whose ways and scientific name are unknown to the reporter. Whether it is only a transient visitor, or a permanent citizen, remains for Prof. Webster to decide.

In December, 1896, the presence of San Jose scale was discovered upon Catawba Island. After thorough investigation it was found that this pest had been present for eight years, having been introduced upon pear trees planted in 1889. From this starting point it had spread to adjoining trees to a distance of half a mile, thus covering all trees over a territory a mile in diameter. Energetic measures were at once taken to enforce the law and if possible eradicate the pest. Acting under the advice of Prof. Webster, the Fruit Commissioners ordered destroyed about one thousand trees, the severe pruning of all trees in the infested district, and the spraying of those badly infested with kerosene, and the remainder with whale oil soap solution. The effect of this treatment is shown in the diminished numbers of the scale, though it is to be regretted that it is not complete. Of those sprayed with kerosene, not a single peach or plum tree survived the treatment.

An industrious newspaper correspondent who attended the January meeting of our County Horticultural Society, spread exaggerated reports in the daily papers, under startling headlines, which would lead the stranger to believe that not only the trees but the people of the whole lake region were infested with deadly scales. The report was copied by papers far and wide, and certainly gave Catawba Island a scaly reputation. But the truth confines the insect to the territory named, less than a mile in diameter, and nowhere else found in the county outside this territory. How or why this should be allowed to spread in a community of wide awake fruit growers, undetected for eight years, we cannot explain. But for the existence of a County Horticultural Society, it would probably have been undetected still.

As trees are purchased from all parts of the country, the watchful fruit commissioners were on the alert looking for the introduction of more scale. Their vigilance resulted in finding one consignment of infested trees from a New Jersey nursery which has acquired an unenviable reputation. These trees had been distributed in four widely separated orchards, and but for the watchfulness of the commissioners, would have become centers of further outbreaks. These trees were promptly destroyed.

It seems a hardship that the owner of infested trees should be compelled to destroy them without compensation, in order that his neighbor's trees might not be endangered. The law should be so amended that a part of the loss would be borne by the township in which the condemned trees are situated.

The occurrence of peach yellows mentioned last year, seems to have been entirely eradicated by the prompt destruction of the trees. This too seems a feeble foe as we come to know more about it.

The Ottawa County Horticultural Society has held nine successful meetings during the year, and is doing good work in its way.

The President: This report is open for discussion.

Mr. Pierce: How can a community be intelligent that didn't organize a Horticultural Society until last year? Some of us have had meetings for twenty years.

The President: It is somewhat to the credit of the ad interim committee and to the State Horticultural Society, that that organization was effected in Ottawa county. That is a direct result of the efforts on the part of the State Society, and I am glad to know that that organization is doing good work. I do not see why it is not one of the best arguments in the world for becoming a member of the State Horticultural Society.

Mr. Sweet: A member said that it seemed like a hardship that one man had to stand the whole loss of the destruction of the trees. I do not know whether we could make it work right under the law or not, but if we could it seems to me that it would be better and every township would feel more interest in the matter; let every township have its board of fruit commissioners. If they had to help pay for the destruction over the township they would want to look after it. In our own township there are three fruit commissioners, and I think it is necessary that there should be one at least in every township.

Mr. Bear: The point made by Mr. Sweet about keeping it out of a township or county, I do not believe it would work very well, because I am rather peculiarly situated. I am in the corner of one township and that joins another county. If one county would take care of it, and another didn't, it would not do very well. I believe it ought to be a state affair. I believe it could be managed if the whole state contributed toward preparing for this pest.

And thereupon motion by Professor Selby, a recess was taken until 6:30 p. m., Standard, of the same day.

EVENING SESSION.

Wednesday, December 1st.

The Society was called to order by the President pursuant to adjournment.

The President: The management who have taken such a great interest in our meeting here have been successful in securing some music for our entertainment this evening, and it seems quite proper for us to have music, fruit and flowers and discussions that pertain to those subjects. We will now listen to the anthem: "Hear us, O Father."

The President: After such a piece of music it seems like coming from the sublime, not to the ridiculous, but to the practical to call upon our secretary for questions which we have in the question box.

The Secretary: What are the three best cherries for market for Ohio, early, medium and late?

The Secretary: I don't know whether the querist failed to be here this afternoon or whether he was here and didn't succeed in satisfying himself. Can anyone add anything to what was said in regard to that this afternoon?

Mr. Shirer: What section of Ohio does he mean?

The Secretary: It doesn't state. I think the question comes from a gentleman in this county who was not present. I think the sense of the meeting is the Dye House, The Richmond, Montmorency and English Morello. There would be four. Which one would you cut out? I would cut out the Dye House for my own use.

Question: What is the cause and remedy for green moss under peach trees?

Mr. Albaugh: Poor cultivation, I should think.

Mr. Ohmer: Dampness.

Mr. Pierce: Too much shade primarily.

The Secretary: Both combined probably.

Professor Selby: I presume that is a growth of either moss or a lower form of alga, and simply stands for a condition of both shade and moisture.

Mr. Shirer: Does it do any injury?

Professor Selby: I think not, unless the conditions of moisture are such as to impair the ordinary activity of the peach tree or orchard tree.

The Secretary: We are led to believe that the peach wants a warm dry soil and those conditions of moisture would not be very favorable to its health.

Mr. Pierce: In green-house cultivation, moss is a very serious injury to anything it gets on. I believe that moss is injurious to the peach tree.

The Secretary: It would seem that if the moss covered the entire surface that it would interfere with the order and processes of nature, but if it were just around the trunk of the tree it would not be so serious.

Question: Is the Columbian raspberry musky? Is it more hardy than Shaffer?

Professor Green: It is not more hardy.

Mr. Whitney: I have one which I have had one winter, and I think it is.

Professor Green: I do not call it musky.

Question: Are there any new diseases or insects injurious to peach, plum or cherry?

Professor Webster: There are none of them new.

The Secretary: I presume the gentleman means have they made new demonstrations?

Mr. Carruthers: The Cleveland papers reported last week that the Oyster louse is making great ravages in the fruit in the vicinity of Cleveland, and that it was hardly worth while to destroy them because they multiply as fast as you kill them. I thought after coming here I would inquire if there was any development in that particular.

Mr. Albaugh: Mr. Secretary, I object very seriously to that way of putting the question—talking about the Oyster louse after having the (oyster) supper that we had down there to-night. (Great laughter.) I suppose he meant what is called the Oyster scale. I think that went into the Ark along with the other animals and probably that newspaper man has just discovered it, but when he talks about the ravages of that scale insect cleaning up fruit trees in Ohio, he probably knows just about as much about it as about politics or any other kindred subject.

Question: What has been the result of spraying on apple, plum and potatoes for 1896?

The Secretary: I think the gentleman ought to have been here this afternoon.

Mr. Shirer: There was nothing said about spraying potatoes this afternoon. Did anybody spray potatoes? I didn't put that question in though. (Laughter.) Did anybody spray potatoes last year?

Mr. Harrison: We sprayed our potatoes this year three times thoroughly, and we thought it was a decided benefit. I would never use poison without using Bordeaux mixture or something similar.

A Member: I would like to ask right in connection with that question, if spraying with Bordeaux mixture would have a tendency to prevent the rotting of the tubers, either in the ground or after digging? I sprayed my potatoes only once with Bordeaux mixture, and while a good many are complaining about their potatoes rotting, mine are keeping perfectly sound.

Mr. Harrison: Really I do not know whether spraying would be beneficial in preventing the rot in the potato or not. I do not think spraying once, or twice, or three times is a positive preventative of the disease,—the blight. Because if you have a hard, rainy season that washes all the poison off the vines, then the blight may strike them. If you want to be sure, you want to follow it up after every severe rain so as to keep the tops covered at all times with the liquid

Mr. Baum: Do you use the simple mixture, or Paris green?

The President: I use both, and I think Mr. Harrison uses both the Paris green and the Bordeaux.

Mr. Albaugh: The Bordeaux mixture would not be efficacious against the Colorado potato beetle at all.

Mr. Shirer: I used the Bordeaux mixture just once and had no more trouble. I had potatoes, that is a fact, but they were just about as thick as my thumb. I was running in opposition to Brother Livingston. (Laughter.)

The Secretary: Then you sold yours at a better price than he did his?

Mr. Shirer: No, I am keeping mine for seed. I expect to get two dollars a bushel, next spring. (Laughter.)

The Secretary: My impression has been that the injury to the foliage works down into the tubers, but I am not prepared to say. I would like to hear from Professor Selby on that point.

Professor Selby: I have not seen the potato rot fungus in Ohio. While I have not hunted for that fungus diligently, I have not found it in the many districts I have visited, and I would think it would come to view from the many specimens sent in if it were prevalent, and therefore I think the rot comes from bacterial cause. We have perhaps two or three distinct forms of potato rot, but I doubt whether the blight causes any serious injury to the potato, except as it is apt to cause injury to the top and thus indirectly injure the tuber.

Mr. Shirer: I might add that the Early Ohios in our neighborhood were next to a failure. Those I speak of were early ones, but I never had potatoes that seemed as hard and solid, and a most excellent flavor. The tops all die down, but I don't know that the fungus has anything to do in connection with the rotting of the tuber.

Question: What is the latest peach that can be successfully grown in northern Ohio peach-growing belt?

The President: We will call upon Mr. Miller to answer that question.

Mr. Miller: That question seems to be qualified by the words "successfully grown." Some years we grow the Salway successfully and other years it does not ripen well. We would not try to grow anything later than that.

Mr. Albaugh: Do you Salways crack?

Mr. Miller: Not when sprayed.

Mr. Albaugh: I doubt whether any peach can be made profitable that ripens so late as in October. It seems that we lose our desire for peaches when the frost begins to fall. We found quite a crop of Salways in Kentucky. In our orchard we found that they not only cracked but there didn't seem to be any market for peaches so late as that. We feel from our experience this year that we would not plant any more peaches as late as the Salway unless we went further south.

Question: When do they ripen?

Mr. Albaugh: The first of October. They look nice and promise well, but they crack and were tough. The principal trouble we found was that they didn't make enough money.

Mr. Harrison: Come up to the Lake Shore and plant your peach trees, instead of going down to Kentucky, and you will have good Salways.

Mr. Sweet: I picked a basket of Salways in November quite as fine as I ever saw. They were grown in Madison, Lake county. As Mr. Albaugh says, sometimes we have to hustle them to get them ripe.

And, while I am up, I would like to speak about another thing, the little towns around the country. We have been talking about insects and somebody asked about the Oyster louse, the Oyster scale in Cleveland. Now, there is where we get lots of the seed from. In these little towns they buy what they calculate is the best of everything they can get to set in their little yards, and raise some plums or peaches or apples. They pay the best prices and want to get the best there is. You may go into any little town in the State of Ohio and you will find insect diseases. Now, in West Cleveland last Friday, I found one little plum tree, Black Knot enough to seed the whole state of Ohio. The fire had run through them from the railroad, and the owner thought he ought to have damages, but I told him it would have been a benefit to him if it had burned the trees down.

Question: What is the best black-cap raspberry, quality, hardiness, and yield considered?

Mr. Albaugh: The Eureka and Kansas are two of the best.

Mr. Scarff: That is rather a hard question to answer. It depends on the market a good deal. The late raspberry brings a better price than the early. I think the best early varieties, as Mr. Albaugh says, are the Kansas and the Eureka. For late varieties, perhaps the Hilborn, the Gregg and Munger.

The Secretary: The only objection to the Hilborn (?) is that it is a mid-season variety. The early and late varieties are what pay in Ohio.

Question: How may we destroy the algae on our lily-ponds?

The President: I guess that is a question for Professor Selby.

Professor Selby: I do not know that I can answer it. It would depend, I would think, so much on condition. We find where we are trying to get good plants in water cultures, that the plants are favorable to the growth of the plant in question, and there will be no object in destroying them as I make it out, except the one of appearance.

Mr. Carr: In our lily-ponds we have an over-flow, that is a down pipe in each pond, and when we want to destroy anything of that kind, we raise the water and let it over-flow, and take the hose and flush everything on top of the water right down the over-flow pipe.

Mr. Carruthers: The algae spoken of is not washed out by any such methods. I have found it difficult, when I take a rake, to get it through.

It would be lined with algae clear to the bottom, and when I would draw the rake out, this algae would be the whole length of the pond, and I would hang it up and dry it and it would be almost like silk, and it would cluster around the lilies and the lotus buds. It is a thing that cannot be worked off very readily. It has a root in the ground and takes possession of the whole thing. I might say I put that in, because I was very much wrought up about the algae taking possession of my ponds this summer. I thought I could skim it off with a little skimmer, but there was no skim to it.

Mr. Carr: If that is the variety that he means, I might say that we have had about the same difficulty that he did. We made a skimmer, too, and when we got a good hold on it; we found by twisting the skimmer and pulling, we got just as good rope as you could out of a hay-mow. There was no end to it, and when we got it all out there was just as much left. (Laughter.) So we gave up trying to grow lilies in a pond with mud bottom. We excavated the ponds clean and planted our lilies in boxes eight inches deep and four feet in diameter, octagon in shape. The boxes are better, and then by using long rubber boots, you can go in there any time and unsnarl it from the stems and pull it out. We find, since that is done, we don't have to wade through and stir everything all up.

The President: As that is the last question in the box, we will take up the regular program, which is the President's Address.

Gentlemen and Ladies, Fellow Members of the Ohio State Horticultural Society:

In accordance with the time honored custom of our Society, I have prepared a brief address. I will not go over the successes and failures of the past season's fruit operations, as that will be fully covered by our efficient ad interim committeemen.

It appears to me that the prospects for a better financial outlook in our business are good. It certainly cannot be much worse than the past two years.

Doubtless, the depression in agriculture caused many agriculturists to seek other lines of effort, and naturally, horticulture was an easy avenue for them to take, the line of small fruits being the first to engage their attention. Where the grape interest was paramount, the planting of the vine was taken up. The results were to largely increase the production of these fruits without a corresponding increase in the consumption. On the contrary, the demand was diminished because of the depressed labor conditions.

Present conditions seem to point to a more profitable agriculture in all its branches. Those of the farmers who have a natural liking for fruit culture, and well situated for it will remain; while those who love the broad fields of grain, the horse, or the dairy, will go back to their first love, to the benefit of all classes. It may be possible that sugar beet culture will claim attention and add its mite to sweeten the horticulture of the future. In fact, the two may go together, even into the fruit can. The law of supply and demand, of profit and loss, are sure to regulate in horticulture as in everything else; and I would counsel those who are naturally adapted and situated for fruit culture, to hold on yet a little longer, ever trying to put a better product on the market, and success will be yours. And in that success, do not fail to recognize the many counts that can be made in your favor, other than the one of finances.

The Sectional meetings held under the direction of this society, last winter, were no doubt as successful as could be expected, yet they are far from what we should try to make them.

If these meetings are to be held in sections where there is no apparent popular demand for them, then our Society must give them greater financial support. In granting a meeting to any locality, there should be a reasonable guarantee on the part of the locality asking for it to insure its success.

I firmly believe that the trend of these meetings should be that of a school, rather than that of an institute. In order to do this, it would be necessary to arrange the scheme at least one year in advance, under a board of managers capable and willing to do the work, for which they should have reasonable compensation. I sincerely hope the society will take some measures looking to this end. Let us make these meetings intensive rather than diffusive, and largely abortive.

The organizing of local Horticultural Societies is a field this Society should not abandon. I still believe there is a wealth of opportunity in this direction, and hope there may be a system adopted that would make this work more successful. I know it is considered the duty of each ad interim committman to work the field he represents. We cannot expect great success under this system unless we supplement it with a lecturer, when such seems necessary. The state would be several societies richer to-day, if a proper representative of this Society could have been available to visit some of the new societies within six months after their organization. When a district representative canvasses his territory and starts a number of local societies, it is as little as this Society can do, to send a competent lecturer to them upon their request, and thus perhaps tide them over what otherwise would be a failure.

Some of our ad interim committeemen have spent time and effort in this direction, without pay other than their bare expenses, only to see their partial success lapse into failures, because of the inadequate support of this organization.

It is not profitable to us to conduct this department under the present system, unassisted by a reserve support. I sincerely hope you will give this matter due consideration.

In my address last year, I mentioned the advisability of a meeting of the executive committee, to arrange our program at least three months prior to our annual meeting. I am now more strongly impressed with the necessity of some such effort than I was then. It would be to the point if the secretary was required to meet with the committee of the last society and canvass the needs of the locality, and the available local talent.

This has been done in this year's program in a little different manner from the one suggested. The results you can best judge.

The holding of horticultural exhibitions is an educational feature this Society will do well to encourage. They impress facts upon the general public and the exhibitors, and help to form the standard of excellence on a rising scale. I do not confine this holding of exhibitions to the large ones, in large cities for money prizes only. But local societies and committees can well spend a few days once or twice a year showing the best they can produce. Let individual members of this Society do everything they can to encourage such exhibitions.

The secretary informs me that the printed matter received in behalf of the Society, is becoming so voluminous that it would be wise action for the Society to select a librarian. It would be well to have some one long identified with us and taking a deep interest in all branches of our work, selected to care for the books and papers coming to the Society. I would recommend this be an appointive rather than an elective office.

The early issue of our report last season was much more satisfactory than the old dilatory method, and it is to be hoped that we will be able to get it out much earlier this season, as it will contain matter that is essential to the inquiring horticulturist who wants information to be used in '98. It is very necessary that all papers read at this meeting, be handed over to the secretary at once, that he may not be hindered in preparing matter for print.

The foregoing suggestions are a few that I would urge upon your consideration, not because they are new, but as some of the practical things that we should undertake. It is not sufficient that we meet year after year, in our annual gatherings and go home again. Let us make an effort to stir up sentiment and interest in horticulture the year round. We have not done our full duty to the world until we have educated the public taste to the fact that there are other varieties good to eat, besides the Ben Davis Apple and Keiffer Pear. That the essence of all that is good in grapes does not lie under the skin of a Concord. That it is much pleasanter to look upon a home, set upon a well kept lawn, surrounded with a few choice shrubs and trees, than upon a pasture setting and a scrub fence row. Commercial horticulture is well able to look after its own interests, especially so *now* when aided by the scientific investigations of National and State stations, whose bulletins are to be had for the asking. It is to amateur gardening and home decoration by the use of trees and shrubs and flowers that we can turn our attention with the most marked results.

There are thousands of people in our state to-day, who are in search of information that will enable them to plant their home grounds intelligently, economically and satisfactorily next season. I am glad our program contains at least one number bearing on this subject.

Let every member, as far as possible, be the advanced guard of our art, showing it is good to practice what we preach. I cannot close these brief remarks without expressing my thanks to the Station Corps for their earnest efforts to make this meeting the success it is. Every horticulturist is interested in the station work, and we want to see the Ohio Experiment Station in the lead. We want to see every department equally and well equipped to do the work assigned to it. Our Society has always given you hearty support in the past, and accord you the same in the future. Although there is no organization of horticulturists in Wooster, or locality, the interest of the citizens in this meeting is commendable and merits the thanks of this Society, for so generously providing premiums and otherwise contributing to the success of this meeting.

Members of the Ohio State Horticultural Society, the program of our thirty-first annual meeting is before you. Let us make the most of our time and opportunities. I ask that you be concise in your discussions, but free to impart your best practices that they may go into our report for the benefit of that larger audience who read our proceedings.

I thank you for your courtesy and attention.

The President: The President's address is evidently to share the same fate as all other papers, and is to be followed by discussion. Is there any discussion on the paper?

Mr. Carruthers: I do not wish to speak too often. I would like to know what suggestion you have by which we can make these meetings of our County Horticultural Societies profitable. You suggest not the ordinary institute method. I have the honor to be the President of our association and it puts upon me perhaps some responsibility to look after that matter. Now, what can I do? I am here to learn. What can I do for our people? What can they help me to do?

The President: I do not know as it devolves upon me entirely to answer that question.

Mr. Shirer: I think you misunderstood. You meant the three local meetings we had last year.

The President: That is what I meant.

Mr. Shirer. And the gentleman has reference to the county societies.

The President: It is a good question nevertheless. What I referred to in my address, however, is the four sectional meetings that are held directly under the auspices of this Society, and controlled, so far as the program is concerned, by the officers of the Society and the local committee. Now, we held four institutes last year, one at Painesville, one at Delta, one at New Carlisle and one at Millersburg, and they were nothing more or less than the ordinary Farmers' Institute, only they were not the Farmers' Institute; they were the Fruit-Growers' Institute.

Mr. Carruthers: Yes, I understand. We hold the same kind of meetings in our county which the chairman pronounces unprofitable.

The President: We have a veteran local horticulturist in our midst to-night who can always swing his hat, I think, for anything of that kind, and I will call upon Mr. Ohmer .

Mr. Ohmer: I haven't a hat here or I would swing it. I would like to ask the gentleman if it is a local horticultural society that he is president of.

Mr. Carruthers: A county horticultural society.

Mr. Ohmer: Well that is not an institute. How often does it meet?

Mr. Carruthers: Four times a year.

Mr. Ohmer: Well, that is not often enough. The Montgomery County Horticultural Society was organized nearly thirty years ago. They meet the first Wednesday of each month and have never missed a meeting in thirty years. We meet at the members' houses for the regular program. We have a good dinner made up of things brought there. The coffee, sugar and cream are furnished where the meeting is held and we bring everything else. In the spring and summer the people sit out of doors in the shade of the trees, and in the winter we meet in the houses. The attendance is from 50 to 150, and we just have a "boss" time, every time.

The President: Don't tell too much. There are a lot of other fellows ready to pop up and tell something better.

Laying all joking aside, I think one of the best points in our meetings seems to be the dinner, and you get more good out of the conversation that passes socially. If you are after information, you almost always find somebody that knows something about it, and you can get it in that way if you don't get it during the meeting. Another point I am impressed with in regard to local meetings, and that is that a good many times it is better not to extend your meeting over too large a section. I believe you could have many places for good horticultural organizations almost within a township, and I am strongly in favor of that kind of an organization that tends to rural improvement. As to the conduct of the meeting I believe that each locality has peculiarities that you have got to conform to. I do not believe any other county horticultural society could be conducted on the same lines as the society that I belong to, and probably it is the same with other societies. You must gauge your pattern according to your cloth.

Mr. Sweet: Our worthy president has left out one point. Wherever the horticultural society meets always have something to show, something that makes an object lesson. If you have nice potatoes or apples or ladies' work, take it to the horticultural meeting. I saw, at one of our meetings, some nice rugs that one of the ladies had made out of a phosphate sack. They were beautiful rugs.

The President: I believe we have no committee on district meetings.

Mr. Pierce: Didn't the executive committee do that work last year?

The Secretary: I think that is their work.

Mr. Pierce: That is what the executive committee is for, isn't it?

The President: It was left in their hands.

Mr. Pierce: What is the use of having an executive committee if they don't do anything?

The President: When you hear the Secretary's report, you will find out that they have done something this year. If there is nothing further, we will listen to another piece of music, "In the Silent Mead."

GREEN-HOUSE HEATING.*

By Director C. E. Thorne, Wooster, Ohio.

Mr. President and Members of the State Horticultural Society:

I do not often begin with an apology, but I think I do owe a little one to this audience for coming before you. I am not an expert in this matter of green-house heating, and I am coming before men who have had a much wider experience on this question than I have had. The reason I may offer is that the little experience I have had in certain directions may be helpful to those who have had less, and if what I may say shall be of help to those, and draw out the experience of others who may have had greater experience than I, it will have accomplished its purpose.

My experience in this matter of green-house heating commenced a few years ago, when we were building a couple of houses at Columbus. I knew nothing whatever about the business and employed a professional plumber. I found, in a short time, that I had to stay with the plumber and tell him what to do; so I discharged the plumber, employed a carpenter and we together did the work. I bought a book which had some useful suggestions in it, but I find it to-day out of date. There are a great many little books or catalogues of apparatus that are very helpful and useful, and may be employed by the non-professional with very good results, and what I shall say will be largely drawn from these with very little original. I do not intend to go into scientific principles, but simply to treat the matter from a practical stand-point.

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*This address was delivered in the main building of the Experiment Station, which is heated by hot water, circulating from a pair of boilers located in the basement of the green-houses, which are in the rear of the main building. The water is carried from these boilers to the main building in 7-inch pipes, and the central point of distribution is about 100 feet from the boilers. The same boilers also heat four green-houses, each 20x100 feet in size. Frequent references are made to this apparatus in the address.

You all know that we are heating buildings of all kinds very successfully with hot water and steam; that is, we are employing hot water and steam as vehicles to convey heat to some distant point. The water absorbs the heat in the boiler and carries it to the point where we wish the heat distributed. The principle upon which hot water heating depends is, that water when heated becomes lighter and increases in volume, and consequently rises or is pressed upward by the heavier, cold water.

Now, this being the case, you will see that what is needed to accomplish the heating of a distant point by hot water is simply to provide a way by which the hot water may rise to that distant point, or be pushed to it by the colder water flowing from that point toward the boiler. That is, to put it tersely, the principle depends upon having a constant rise of pipe from the point at which you heat the water to the point at which the distribution begins. That distribution may begin close to the boiler or it may be far away; and upon this depends one of the points to be kept in mind. On the charts before you I have drawn some illustrations which bring out the points I want to illustrate.

There must be a safety vent of some kind on such apparatus, else the expansion of water would burst the boiler as certainly as can be done by steam or gun-powder, and to do this we carry a pipe upward from any convenient point, and on the upper end of the pipe we attach an expansion tank. In the building in which you are now seated, the expansion tank is located near the top of the tower, for the reason that the pressure of the water column that we get by this method increases the capacity of water to absorb heat; and the hotter we can make the water in the boiler, the hotter we can make it at the distributing point, and for that reason all the pressure possible should be secured. The higher the pressure the better the result will be.

The expansion tank should be open, of course, or if closed, then a safety valve must be located somewhere. A very convenient way is to use a closed expansion tank and safety valve. We can fill the apparatus full of water and set the safety valve at a certain point, then increase the pressure on the apparatus until it reaches that point when the valve will allow it to escape.

Our greenhouses are built in a block of four. The two interior houses are piped alike, each having three two-inch flows and six one and one-half inch returns, the flows being overhead and the returns under the benches, and the system giving one foot of radiating surface to twenty-five feet of cubic contents of the houses.

Because of its exposure, the west house has additional piping sufficient to give one foot of radiation to twenty-three and one-half feet of cubic contents, and not only are the flows overhead, but the returns are carried back along the sides of the house, there being in this house passageways between the benches and the outer walls.

It was designed to grow flowers in the east house, and for this purpose it was piped at the rate of one foot of radiation to eighteen and one-half feet of cubic contents; but the pipes, both flows and returns, were all located under the benches, and these were built against the sides of the house.

We find it easier to keep up the heat in the exposed west house, with its smaller proportion of piping, than in the east house, and to test the matter, we opened all the valves the other evening, when the temperature showed about eight degrees in favor of the east house, but within a couple of hours both houses were at the same temperature.

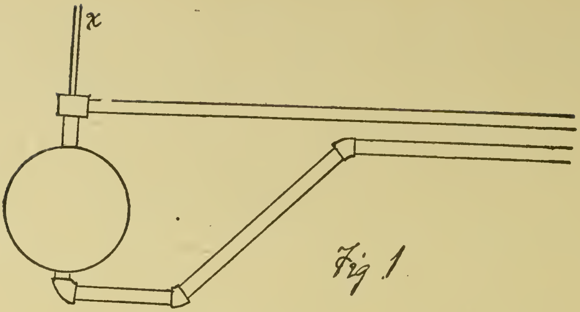


Fig 1.

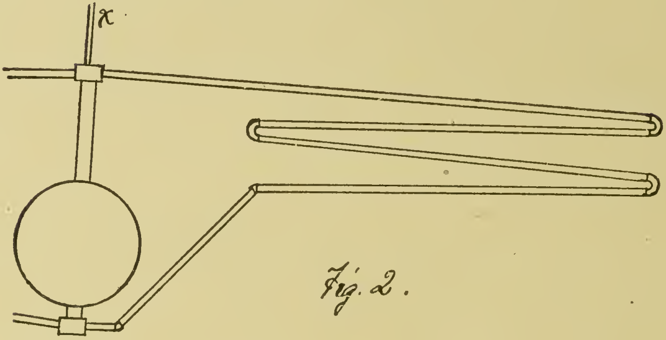


Fig. 2.

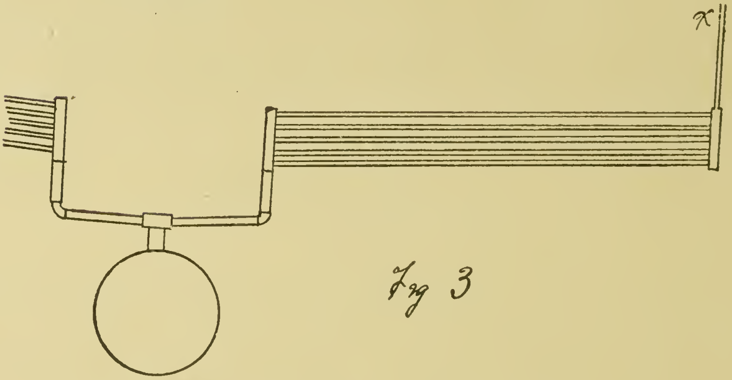


Fig 3

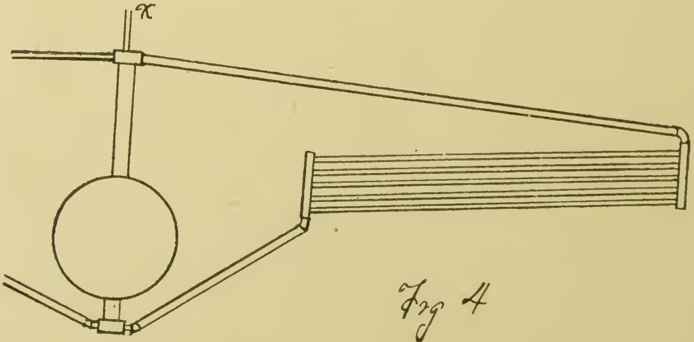


Fig 4

In these diagrams, Fig. 1 represents the mains of an apparatus designed to distribute the heat at points distant from the boiler. These mains should rise at the rate of an inch, or more, in every ten feet until they reach the point of distribution. It is much better to carry the water in single, large mains, than in a number of smaller ones; both because there is less friction in the larger pipes and because there is less surface exposed, and, therefore, there will be a smaller loss of heat.

Fig. 2 shows a two-pipe apparatus designed to distribute the heat near the boiler, the water flowing continuously through the coil, and beginning to fall as soon as it leaves the large main, rising vertically from the boiler—that is, as soon as the increase of pipe surface involves rapid loss of heat.

Fig. 3 represents a one-pipe system. Such a system may give good results where the runs are short and the coils or radiators are closely connected with large mains. In this case, the pipe leading to the expansion tank (indicated by x in each figure) leads up from the branch tee at the farther and higher end of the coil. Such a coil as this would probably be somewhat hotter at the end next the boiler, but in the two-pipe system shown in Fig. 4, the water is thrown in a large flow immediately to the farther end of the coil, thence it is returned slowly through the coil towards the boiler, the combined capacity of the coil pipes being considerably in excess of that of the flow-pipe. This will be found a satisfactory system for houses in which the boiler is located at one end (which is usually the case) thus giving some heat to that end in addition to that furnished by the pipes.

From this experience we are inclined to believe that it is wise to distribute the pipes over the building, especially to provide for circulation around the sides of the building.

Now, there are three points of nearly equal importance to be considered in the laying out of a heating apparatus. We must take into consideration (1) the cubic contents of the house and its glass surface, (2) the exposure, and (3) the purpose for which the house is desired. A house for lettuce does not need to be so warm as a house for carnations, and a house for carnations does not need to be so warm as a house for some other kinds of plants.

In calculating the amount of radiating surface needed for a building, two methods are used: one is to take the cubical contents of the building and the other is to take the glass surface. Either is effective. In calculating the heating surface for dwelling houses we must take the cubical contents, but in greenhouses it is very convenient to take the glass surface. Of course, every care must be taken to have the glass as closely set as possible, but with such care it is calculated that in houses intended for lettuce, one square foot of radiating surface in the pipes will heat about twenty-five or thirty feet of cubical contents in the building, or about four to five square feet of glass, while for exposed situations or special purposes more pipe surface is necessary.

President Cushman: Does it matter whether the pipes have steam or hot water in them?

Prof. Thorne: Yes, it matters very materially; steam is calculated for 50 per cent. greater cubical contents than the hot water. Professor Taft, who has written a very plain little book on greenhouse heating, gives a table showing that under average conditions in hot water heating, each square foot of pipe will heat about four and one-half square feet of glass to forty degrees, four to fifty, three and one-half to fifty-five degrees, and three feet to sixty degrees.

The size of the pipes is an interesting point in this matter of greenhouse heating. A few years ago large, cast iron pipes were used almost exclusively, but now smaller pipes are generally used. We know in a general way that the larger the pipes, the more expensive they are in proportion to heating surface. I have here a table giving the cost of 100 feet of radiation with pipes of different sizes and at wholesale prices. These prices cover wholesale cost and freight. They are practically the prices we have paid. If you buy of a dealer he will want a little commission in addition to these figures:

DIMENSIONS OF PIPES AND RELATIVE COST OF RADIATING SURFACE.

Size.	Dimensions and capacity per linear foot.			Cost of 100 square feet radiation.		
	Radiating surface.	Contents	Weight.	Linear feet.	Price per foot.	Total cost.
	Square feet.	Gallons.	Pounds.			
1 inch	0.344	0.045	1.67	290.4	$0 03	$8 70
1¼ "	0.434	0.077	2.24	230.1	04	9 20
1½ "	0.497	0.106	2.68	201.0	05	10 05
2 "	0 621	0.175	3 61	160.8	07	11 25
2½ "	0.753	0.249	5.74	132.8	10¼	13 60
3 "	0.916	0.384	7.54	109.1	13¼	14 50
3½ "	1 047	0.514	9.00	95.5	15¾	15 04
4 "	1.178	0 661	10.66	84.9	18½	15 70
4½ "	1.309	0.829	12 49	76 4	24⅜	18 62
5 "	1.456	1.038	14.50	68 7	27½	18 90
6 "	1.734	1.501	18.76	57.7	36¾	21 17

The ordinary four-inch pipe will cost nearly double, for the same amount of radiation that one-inch pipe would cost. In the larger pipe there is a great deal less friction than in the smaller pipe, and the latter will require a little more attention than the former. We have not used anything smaller than one and one-fourth inch, as the accumulation of rust reduces the capacity. We are now using one and one-fourth inch, believing that sufficiently large, and it is certainly considerably cheaper than the larger pipes.

In piping long houses with coils of small pipe, such as those indicated in Figures 3 and 4, it would probably be better to make the coils about fifty feet long and run separate feeders to each, from the mains, somewhat as electric railways run independent feed wires to their more distant sections, remembering that the longer the water can be kept in large mains, the smaller will be the loss from radiation and friction.

What is true of pipes is to some extent true of boilers, but perhaps in a different way. I have here a table concerning boilers which exhibits some interesting points:

DIMENSIONS AND RELATIVE CAPACITY OF BOILERS.

Diameter.	Length of Tubes.	Sq. Ft. of Grate.	Capacity.		
			Sq. Ft. Radiation.	Radiation Per Sq. Ft. Grate.	Horse Power.
30 in.	8 ft.	7.5	1.000	133	12
36 "	10 "	10.5	1.800	172	20
42 "	10 "	12.25	2.400	196	25
44 "	12 "	14.67	3 600	245	35
48 "	12 "	16.0	4.200	262	40
48 "	14 "	18.0	4.800	267	45
54 "	12 "	18.0	5.000	278	50
54 "	15 "	20.25	6 200	306	60
60 "	14 "	22.5	7.200	320	70
60 "	16 "	22.5	8.400	373	80
72 "	18 "	30.0	13.000	433	150

Attention is called to the rapid increase in radiation per square foot of grate surface as the boiler increases in size.

Now, I notice that the engineers claim that the coal burned is in proportion to the square feet of grate surface. This means that a large apparatus, centrally located, may do its work with less than one-third the coal that the same amount of boiler surface, distributed in various small apparatuses will require. To illustrate: We did not want the dust and smoke of a furnace in this building, and therefore we put the boilers in the green-house, doing it, as we supposed at the time, at a very considerable loss of fuel. We supposed it would take a great deal more fuel to heat this building from that building forty feet away, than if we had put the boiler in this building. We supposed it would take a great deal more fuel to heat the two buildings if we put the two boilers in one building than to put one here and one there, but when I put these figures together, I conclude that we are saving fuel by putting the two boilers side by side.

In the large pipe that crosses from one building to the other, we have about 300 feet of radiating surface, but that is so packed with mineral wool that we see by observation that very little heat is lost. Moreover, part of the heat that would be lost with the two boilers set up separately is saved by setting them close together.

The President: It would still be safe if you had only one boiler, would it not?

Mr. Thorne: It would still be safe. Only one of the two boilers is employed during a good portion of the year, but even then we could use the single, large boiler about as economically as we could the small boiler.

When we began, we paid no attention to our angles. We put everything together with right angled elbows and tees. We now use 45 degree elbows and wyes wherever we can, especially in our large mains, and we have accomplished a considerable saving. In one or two instances in piping this building, we were able to save several feet of large pipe; this saved several feet of run for the water and several dollars of expense, and similarly with the smaller pipes. In planning our mains, we begin at the distributing point, calculating the amount of radiating surface required, and the amount of main required to supply it; then as we go back towards the boiler we aim that our mains shall be equal to the combined areas of the branches. It is not necessary that it should be quite so much, because there is less friction in one large pipe than in two small ones, but it is an advantage to have ample area in the main, and we find it better to follow this rule as we go back toward the boilers.

Mr. Sweet: How much water do you waste in a day?

Mr. Thorne: Very little, indeed. I do not know how much water we do waste, but in my dwelling house heating we do not run in the water more than once in two or three or four weeks.

Mr. Carr: I would like to ask if a system that is plumbed for steam, which has always smaller pipes, say house heating apparatus, in which the flow is one inch and the return three-fourths inch can be adapted to hot water without making larger returns?

Mr. Thorne: It is my opinion that the small pipe would soon fill up with rust and interfere with its work. With hot water the returns ought to be as large as the flow pipes.

Mr. Harrison: There is one point I do not think the Director has covered completely, and that is insurance. These green-house fellows don't like to take great risk. We would like to put in two boilers, and then if we get cut off from one, say while repairing a defective boiler, the other will keep the green-house warm. I think it would be very poor policy for green-houses to depend upon only one boiler.

Director Thorne: I am glad Mr. Harrison made that point. That is the reason we put in two boilers, and we have coupled those two boilers together so we can use them separately or together as we choose.

Mr. Albaugh: Did I understand you that steam is not available in green-houses to the same extent as hot water?

Director Thorne: Not at all.

Mr. Albaugh: It is in house heating.

Director Thorne: I didn't mean to say that. Steam is available, and is probably preferable for large establishments, but we prefer hot water in small ones, and especially for dwellings and offices.

Mr. Albaugh: Do you know what time is considered the life of hot water piping?

Director Thorne: We have had no experience. I asked that question of a hot water heater who has been in the work a long time. He told me that over in Canada, where they have been heating forty or fifty years, the pipes are still running successfully.

Mr. Albaugh: I have had some experience with hot water heating, and have never had any trouble with the pipes rusting at all or anything of that kind. We heat a house of fourteen rooms and have never had any trouble with the apparatus, and in that time a dozen stoves would have worn out.

Mr. Carruthers: Do you draw the water off in the summer?

Mr. Albaugh: In the summer, yes, and fill up in the fall.

Mr. Carruthers: I have been told if you keep them full the whole season, there is less rust.

Mr. Albaugh: I have been using for seventeen years the Belmont boiler made at Geneva, New York, and they recommend that the water be drawn off at the end of the season.

Mr. Wise: I have been using hot water for some time, and I think it is a mistake to draw the water out, in either steam or hot water. The life is said to be longer in hot water than in steam, for the reason that steam corrodes and destroys the pipes while water will neither rust nor corrode. I have used both steam and hot water for my residence and green-house purposes, and I find that steam is too hot, either for residence or green-house. I think the water is longer life. It costs more to put it in but requires less attention. Do I understand you, Mr. Thorne, that you return your water in the flow pipe from the expansion tank?

Director Thorne: We connect either the flow or return pipe with the expansion tank—usually the flow—and with a single pipe. There is usually circulation enough in this pipe to prevent danger of freezing in the expansion tank.

Mr. Wise: I do not know whether there is any patent on my tank. I use a tank that holds 60 gallons, and then I have an elevated tank to over-flow, and when it over-flows it comes into this reservoir and back in the return pipe. I do not see the object of the return in the flow pipe.

Mr. Albaugh: I do not exactly understand why you should make the statement that green-houses heated by steam would get too warm.

Mr. Wise: Simply because you have no heat in your pipes unless you have 212 degrees of heat.

Mr. Harrison: In heating your house with the one-pipe system, if you have just the common vent and there is too much steam comes in, shut it off; you can have one or two or three loops. There are a great many people who have these radiators, who do not understand that they need not have them full.

Mr. Carr: I am an admirer of steam heating apparatus myself, and I have no difficulty in controlling it, because we have valves, so that if there is any danger of being too hot we put on one return, or two or three.

Mr. Carruthers: I want to say one word for the hot water system. I have had experience in the school room with hot water and steam, and steam is so "flashy" it cannot be relied upon. Somebody has to watch it all the time. I got tired of it in the school building. Water holds its heat more reliably, more steadily; it is not so flashy. If you had an expert engineer to look after it all the time steam would be better.

The President: Perhaps we have used time enough on this subject. It has been suggested to me that the next number on our program ought not to be taken up this evening. It is somewhat late and there are really three heads under that subject, three distinct papers upon it, so if there is no objection we will drop that from the evening program. It has been suggested that we take up some of the questions for discussion, for a few minutes and close our program with the last number of music. It has also been suggested that we do not take up any of the subjects that refer to the canning business, because our friends in Wooster are agitating the subject of canning, and it is possible that they will be here in large numbers in the afternoon.

Question: What is the best method of growing and keeping celery for home use?

Mr. Carr: I should have two different ways. I think that the celery that is used early in the season, say before Christmas, had better be taken up and trenched. I do not think it makes as much difference what kind of a trench, as the way it is treated after it is in the trenches. We prefer trenches about 18 to 24 inches wide, and deep enough so that the top of the celery, will be about the top of the ground when it is in. I have also set boards up at each side of the trench to prevent caving in. Then by throwing some boards across, we can make a roof, of ordinary cheap lumber. We use 12-foot boards and when we put two sections together, we skip a space about two or three feet, and then we have a short piece to set over the hole and use that as a ventilator. And in covering these boards, we use ordinary coarse manure and rather dry, because it is easier to get off.

For celery to keep late in the season, till spring, I think the method that I heard Professor Green describe last year, is the only one, if you want to have it as late as the last of March or first of April. That is, to grow a row or two rows, somewhere, where you can bank it right up where it grows. That celery which has not been disturbed, will keep until late in the spring, while the other that has been trenched is easier to get at and will keep until after the holidays.

The President: Is there any other method that any member wishes to suggest?

Mr. Whitney: For the soil I have it would not need any drainage, but for heavy clay soil it would not do to put it in that way, unless there is some way to provide for drainage. I have trenched in the same manner, but there is another good way that many practice in keeping it for family use, and that is, to put it in the cellar, taking a common shoe box and putting about four inches of soil in the bottom and standing the celery in that, the same as in the trench and leave the soil around the roots. You can put it in the cellar and keep it there all winter, and I think it is preferable, because if we have quite a long cold spell, it is not necessary to go out in freezing weather and open up the trench.

Mr. Moore: There are two matters that I want to suggest that you may think about and dream about until to-morrow, when I will probably present them in a more formidable way. One is in reference to the Ohio weed law. It seems to be not well understood, or not well enforced, and I think this Society should have a committee, of which Professor Selby should be chairman, to give the botanical and common names of noxious weeds which are becoming so prevalent among us. I say something about this matter in my report.

Another one is this: A gentleman, who is the editor of a paper, suggested last night that he didn't see any good reason why this Society should not have at least a one-half fare rate for attendance at our meeting. He could get it for a fox hunt and that we ought to have it for our organization, and I suggest that he be made an honorary member and placed at the head of a committee to go before the Traffic Association.

The Secretary: Perhaps a little explanation of the rules of the Traffic Association would not be amiss here. You will remember several years ago I succeeded in securing for this association, one and one-third fare, for several years Since that they have adopted a different rule, and on my next application to the agent of the Traffic Association, he stated that we could secure the rates, but that it would be necessary for our Society to pay the traveling expenses and hotel bill of an agent, of that association to stamp the tickets, also pay him ten dollars per day, and then if there were 100 in attendance, we could secure the return rate for one-third fare. This placed the matter beyond our reach entirely. After that I made an effort for two or three years and finally abandoned it.

Mr. Moore: I believe that is only a "bluff" from the Traffic Association. I have had something to do with the Traffic Association myself and have had a pretty close connection with some of them, and I think that that is a bluff, and I believe if the gentleman publishing the paper could get it for a fox hunt, he could get it for this organization.

The Secretary: A party of ten can obtain reduced rates at any time. That is why the fox hunters secured cheap fare.

Director Thorne: There is one thing which I think the members of this Society can do, which will be more effective than to attempt to get a reduced rate to your meetings, and that is to go down to Columbus this winter, and say to the members of our Legislature, that we have got to have a straight two-cent rate in Ohio. The railroads are able to give us this rate. The roads which have been doing the small business in Ohio, the north and the south roads, have been selling mileage tickets and when you bought one of these it was taken without any question, and you got your two-cent rate. There were only two or three roads in Ohio which refused to join in this general mileage ticket business, those were the roads which carried the most passengers in Ohio. These great transcontinental roads are carrying loaded trains every day across the state, and they have caused the cheap, available mileage book to be withdrawn, and now the time is ripe for a decent mileage book or else a straight two-cent rate, and if you will go down to the Legislature, and the Legislators do not carry pass-books in their pockets, we will get this rate.

Mr. Albaugh: I will say I have had a little experience in this two-cent rate business, and we found that the great trunk lines of the Pennsylvania road, the whole system, the Big Four system came up to Columbus and said we are ready and anxious that you pass a law for the two-cent rate. The parties that kept that law from being passed six or eight years ago, were the little roads that said they were not making expenses, that they could not live on a two-cent rate. I believe that nine-tenths of the roads in the state are ready to grant it. There are a few little roads in the state that claim they cannot stand it, but I wonder how the people in Ohio have been able to pay the three-cent rate the last three or four years.

Mr. Woodard: It seems to me that we ought not to pass the President's address by, without having a committee appointed to take into consideration its recommendations. I therefore move that the following gentlemen be a committee to take into consideration the recommendations of the President's address: Professor W. J. Green, William Miller, Secretary Farnsworth, Mr. M. E. Sweet and Mr. Aultfather.

Motion carried.

After the chorus sang "Light may the Boat Row," a recess was taken until 8:30 a. m. the next day.

MORNING SESSION.

Thursday, December 2nd.

The President called the convention to order pursuant to adjournment at 8:30 o'clock, and said: The first topic this morning will be the "Studies of the San Jose Scale outbreak in Ohio," by Professor C. W. Mally.

STUDIES OF THE SAN JOSE SCALE OUTBREAK IN OHIO.

By C. W. Mally.

The San Jose Scale problem in Ohio, is discussed very carefully in Bulletin 81 of this Station, copies of which may be had on application.

It is not the purpose of this paper to rehearse the facts therein stated, but to state briefly a few points that have developed lately, and to mention others in regard to which we are in doubt so that members of the Society who may have an opportunity to observe certain outbreaks, may be on the alert and thus aid in their solution.

Besides the 22 food plants mentioned in Bulletin 81, two others, Snowball, *Viburnum opulus var roseum*, and New Jersey Tea Plant, *Ceanothus americana*, have been added to the list. In the Canadian Entomologist for July, 1897, snowball, owing to a misunderstanding, was given as a food plant. Since then we have found young scales established on a small snowball, growing directly under a badly infested rose bush at Greenville, Ohio. Mr. W. H. Owen found it quite abundant on New Jersey Tea Plant on Catawba Island. At Greenville, two cherry trees were found to be quite badly infested, but the variety could not be determined with certainty, Mr. E. M. Buechly stating that they "belong to the sub-acid cherries of the Duke family."

HOW DOES THE SCALE SPREAD IN THE ORCHARD?

The wonderful rapidity with which the scale sometimes spreads through an orchard is one of the most puzzling questions in connection with the problem. The wind undoubtedly plays an important part in its distribution. What is to hinder the very young scale insects, as they are crawling about, from being carried as easily as are pollen grains, especially those of the conifers? In an orchard at Amesville, Ohio, Prof. Webster found that the scale had spread up a small ravine, and that the prevailing winds were right in that direction, no scale having been found below the infested trees. In another orchard at Amesville, where the trees were somewhat more protected, the scale had hardly spread from the original introduction. At Eaton, Ohio, an orchard at least 40 rods from the original source was found to be but very slightly infested in September, 1897, while during the preceding winter it was apparently free from scale, the infested orchard having been destroyed early in the season. The scales on the infested trees were not clustered as if carried by birds, but were distributed evenly. In this connection, however, it should be stated that a number of small, infested trees had been planted out in the yard fully eight rods away from the trees at present infested. They were transplanted during "Corn-husking time" (October) and taken out and burned in March, having been there only during the winter season. It seems impossible for the scale to have spread during this time. So its presence must be due to the intervention of some unknown carrier. A somewhat similar case was found at Constantia, O., where two small pear trees had been transplanted from an old infested orchard to young apple orchard. Although the infested trees were there only one season before being discovered and removed, the surrounding trees, though apparently entirely free early in the spring, were found to be very slightly infested during the following September.

Numerous instances have been found where there can be but little doubt that the scale was carried by birds. Besides those cases found by the Fruit Commissioners on Catawba Island, we have found a number of instances where the scale must have been carried in this way. At East Toledo where eighteen trees were condemned, four or five marked as doubtful, and one to be carefully pruned before spraying, the latter had just one limb badly infested, while the rest of the tree was comparatively free. In the Greenville outbreak, one Hyssop crab tree was found, the top of which was simply a mass of scales while the trunk and the larger limbs were comparatively free. This tree also furnished one of the worst cases of infested fruit which I had ever observed. The owner declared very positively that "There can be nothing wrong with the tree because the fruit this year is the prettiest that I have ever seen." The latter part of the statement was literally true, for the apples were most beautifully mottled, the intense coloration being due to the presence of the scales. The owner lost both enthusiasm and appetite, however, when shown the true cause of the pretty fruit. A tree in another yard was about to be pronounced free of scale when a small branch which was out of reach was noticed as having the characteristic appearance. A closer examination proved it to be encrusted. The scale had spread to the surrounding limbs in small numbers, but the rest of the tree was uninfested. One fortunate thing in the scale problem is the relative immunity of cherry trees; otherwise each return of cherry-time would simply be a time when all trees surrounding infested cherries would be furnished with a liberal supply of San Jose Scale. The rather extensive distribution at Greenville may possibly be due to the infested cherry trees mentioned before.

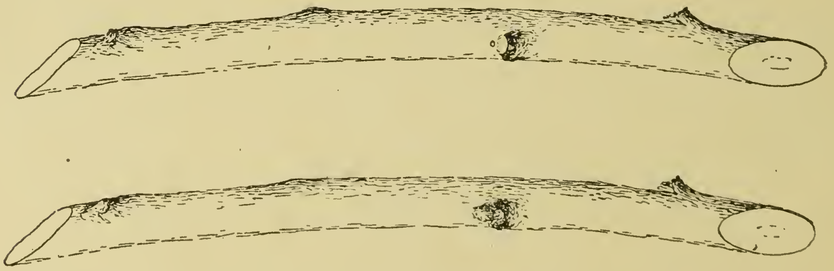
Among insects, ants are certainly the most dangerous, for they explore every tree perhaps many times during the year in their search for plant lice. Since young scale insects have actually been found upon the ants, and considering the ability of the latter to travel, we must expect to find the scale in the most unlikely places. One instance studied by Prof. Webster seems to point very definitely in that direction. It is well known that ants carry plant lice to safe retreats on the roots of plants. May they not also carry the San Jose Scale to the same retreats?

MAN AS A DISTRIBUTING AGENT.

Aside from the nursery problem we have found two instances where the scale seems to have spread through human aid. In one orchard where the distribution could not be accounted for at the time except that it was in the direction of the prevailing winds, we learned afterwards that the owner always jarred the plums and peaches for the curculio, beginning in one end of the orchard, which happened to contain the infested trees, and dragging the canvas to the other trees, usually over the same route, which corresponds quite definitely with the distribution of the scale. Considering this in connection with the case of the team and cultivator mentioned on page 205, of Bulletin 81, it seems probable that in some cases the distribution may be due to some part of the routine work never thought of in connection with the scale. This is especially important in regard to fruiting orchards in which, if there are infested trees, those who do the work, especially that of gathering the crop of fruit, will, at the same time, be giving each tree a good supply of scale. The storing of nursery stock in large quantities is also a very important matter, for a few trees or scions brought from an infested region may be the means of infecting a large number of others. But this raises the question as to the temperature at which the scales are dormant. Considering insects in general, Prof. Webster thinks that they will not reproduce in a temperature lower than 60° Fahrenheit. In this connection it may be well to state a little experience in the Insectary. In February (1897) a section (about one foot long and one inch in diameter) from a badly infested plum tree was tied along-side a small plum tree growing in the Insectary and left undisturbed. In a few days numerous young scales were seen crawling about on the infested section; but although the section and the tree were in close contact in many places, not a scale was found to have established itself on the growing tree, but all seemed to settle down and perish within an inch or two of the mother scale. About November 1, 1897, another section (about four inches long and one-half inch in diameter) from a badly infested plum tree was received and placed on another small plum tree growing in the Insectary, and left undisturbed as before. During the following ten days scores of young scales were crawling about on the infested section, and, although it was in close contact with small twigs and leaves in many places, to-day (December 2, 1897) no scales can be found on the growing tree, although careful search has been made by both Prof. Webster and myself. Considering only these two instances it would almost seem that where nursery stock is kept in perfect quiet, the danger of distribution is not as great as might be expected; and furthermore that outdoor conditions are essential for the most rapid distribution.

DIFFICULTY OF THE WORK.

It is apparently impossible to place an exact limit on the scale in the field. In three separate cases the inspection work was done as carefully as possible during the winter and early spring of 1897, yet at the close of the following summer a few very slightly infested trees were found just outside of the limit. This is well illustrated by two cases that have come to our notice, one of these being shown in the accompanying figure, showing where a single scale was found completely protected by a bud, the lower figure showing twig before bud was removed, and the upper one showing the same twig with bud removed and revealing the scale.



Where tress are condemned, simply cutting them off is not sufficient. They must be grubbed out and burned. At Greenville where a pear tree was cut off in early spring, as close to the ground, as possible, live scales were found the following September, although the margin of the stump above ground was not more than three-fourths of an inch in width.

In another case a young apple tree was cut off below the surface and burned in the spring of 1895. The sprout that came up from the stump was quite badly infested when examined October 4th, 1897, but the repeated plowings since the tree was burned, make it impossible to determine just how far below the surface it had been cut off—possibly 6 or 8 inches. It is hardly probable that it was re-infested from surrounding trees for it was comparatively worse infested than any of them.

In a bunch of Carolina Poplar cuttings sent in for inspection, two scales were found about an inch below the surface mark. Prof. Webster found the scales to be dead but it could not be determined whether they had reproduced and died, or, whether they succumbed to subterranean conditions. Quite recently Mr. W. H. Owen, of Catawba Island, found a New Jersey Tea Plant, *Ceanothus americana* on which perfectly healthy scales were found one and one-half inches below the surface mark, and that a runner from this plant harbored healthy scales about two feet away. But the soil was largely loose leaf-mould From these cases it seems evident that if the soil is not too closely packed, or if there are loose cracks or openings in it, we may expect to find the scale on the roots. Whether or not they will live and reproduce in the cavities made by ants as they are working around young trees is an interesting problem.

A patch of currant bushes condemned in April, 1897, was grubbed out as carefully as possible and the ground plowed. A little later it was found that a few branches had been missed and even the plowing had left tips projecting on which the scale was thriving perfectly.

HOW LONG WILL IT TAKE FOR THE SCALE TO KILL A YOUNG TREE?

In answering this oft repeated question it must be said that the time required depends entirely on how badly the trees are infested when planted.

This year we have found three cases that give quite definite evidence on this point. The first was a variety of Japan Pear (Domingo) transplanted in the spring of 1893. By January, 1897, it was badly infested but not badly enough to kill it. Three others planted in the spring of 1894 were so badly infested that they were practically dead by January, 1897. Whether the first was more slightly infested, or is a distasteful variety, we are unable to say. In another orchard a number of young apple trees planted out in the spring of 1895 were completely encrusted with scales and practically dead in Sept., 1897.

While the above seems to be the general rule, we have found two cases which indicate just the opposite. In both orchards the trees were planted in the spring of 1891. A few trees in each orchard were found to be slightly infested in the spring of 1897. In one of the orchards the trees had never been treated with anything, while in the other the trunk of each tree was washed annually with soap-suds on account of the borers. They were both in practically the same conditions in September, 1897, the scales having increased but very little.

A third orchard, not over one-half mile away and planted at the same time and from the same lot of trees, was so badly infested in the spring of 1897 that a number of trees were taken out and burned, and many more were found to be seriously injured. There was nothing whatever to indicate that the two former had become infested from the latter.

NATURAL ENEMIES.

The question is often asked: Will not some natural enemy arise which will hold this pest in check completely? While this is possible, we certainly will have to fight it on different lines in Ohio. In the case of the Lady Beetles which undoubtedly destroy many of them, we must not overlook the possibility that while they help to check it in one tree they may be the means of establishing it in another.

Considering the outbreaks as a whole, it seems very evident that the problem as it confronts us at present, is small in comparison with what it will be a few years hence; and the sooner we adopt the most thorough measures to overcome it, the better it will be for us.

The President: It would seem quite proper in taking up this subject this morning that we hear from Professor Webster first, and then discuss the whole matter after hearing the two papers rather than divide the discussion, so we will listen to the regular report of the entomologist, Professor Webster.

REPORT OF COMMITTEE ON ENTOMOLOGY.

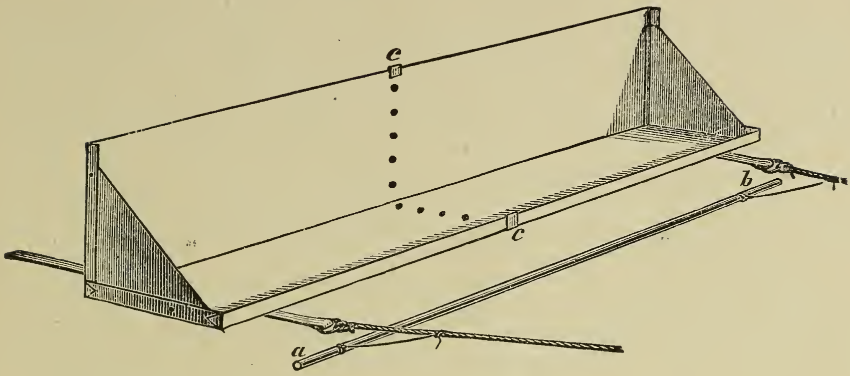
By F. M. Webster.

It has been stated that there can be no two objects precisely alike, and it is as surely true that there can be no two seasons just alike, in the nature of insect depredations. Within the last twenty years there has not been a summer during which there were not one or more species of insect pests, working more or less injury to some crop, or affecting some of our domestic animals. Just now there is, in some parts of Indiana and Ohio, a superabundance of rats. These animals have become so abnormally abundant that they are little less than a veritable plague; yet in these areas of abundance there is no perceivable cause for such unusual numbers.

With insects it is much the same, and I have in spring often wondered what species it would be that would come to the front, so to speak, during the coming summer, and except in cases of a periodical appearance, like the Cicada, it has almost invariably been the unexpected that occurred, or if not, the out-break was apt to be in a different locality. During the last four years, the chinch bug has been destructively abundant in some portion of Ohio, yet during this time it has not caused serious destruction twice over any considerable area of territory. The rule has been that where the greatest injury during any year has been done, there was little or no complaint of injury the year after.

The Two Striped Locust, or grasshopper, as it is more often called, *Caloptenus bivittatus*, appeared in some portions of Muskingum, Harding, Licking and Wyandot counties, last year in excessive abundance and worked considerable injury. This year this insect appeared in Champaign, Jackson and Gallia counties, while next season they may be equally abundant elsewhere. The insect works in spots, often of not more than a few hundred square rods, over which it literally strips the clover, timothy and grain, while a quarter of a mile away it can hardly be found at all. In Wyandot county, last year, the infested area included only a few farms. This year, in Gallia county, the infested areas were even more limited, and changed materially from those occupied the previous year. This species appears earlier than the most of our insects commonly termed grasshoppers, reaching their maximum numbers prior to the clover hay harvest.

As a means of destroying these pests, I have found nothing better to use on level or comparatively level ground, than what is termed in the west as a "hopper-dozer," or shallow pan of galvanized iron. These pans are made by turning up one edge of a piece of sheet iron, say eight or ten feet in length, so that a front about two inches in width is formed, while the other edge is turned up about a foot, and constitutes the back. Ends are rivited in and afterwards soldered, and when finished, the pan, if made of a sheet 26 inches in width, will be 12 inches in width with a front of 2 inches and a back of 12 inches. Runners, made of wagon tire, and about three feet long or longer are rivited to the bottom near each end, and there is a similar runner in the middle to strengthen the pan and to keep the middle from sagging. The pan is filled with water and kerosene, and a horse attached, the pan being drawn by the runners, and as the horse is driven backwards and forwards across the field, the hoppers will jump backward, either into the pan direct, or else



against the back, and fall down into the kerosene and be killed. Bushels of the insects can in this way be collected and killed in a short time, and enough caught by going over the field once to reduce their numbers to below the menacing point.

Last year there was a small red mite, *Trombidium locustarium*, that attacked these grasshoppers, by attaching themselves to their bodies under the bases of the wings, usually quite a number attacking the same insect first weakening it and finally killing it, and it was to these parasites, I believe, more than anything else that the farmers of Wyandot county are indebted for the almost total disappearance of the pest from that locality the present year.

This season, I have observed both this mite and a species of fungus disease, similar to the one we have been distributing for the extermination of the chinch bug, killing this grasshopper in Gallia county. The little red mite was again getting in its work, advantageously to the farmer, but I doubt if one of the latter was aware of the fact.

Last spring a small leaf rolling caterpillar, the young of a light brown moth, *Oenectra distincta*, worked serious ravages in the young plum stock of the Geo. Peters & Company nursery at Troy, Ohio. This little miscreant rolls the young leaves together and forms a sort of living tube or chamber within which it remains and feeds on the tender leaves and tips of young growth, thereby destroying the shoots, both of the stock and the budded portion which represents the future tree. This pest was so excessively abundant that hardly a young growing shoot escaped, and the damage was a very serious one.

This fall, in another block of plum stock that was being budded at the time, what was supposed to be the same species was working in precisely the same manner. On rearing the moth, however, we find it entirely different, and a variety of the Lesser Apple-leaf Folder, *Teras minuta var cinderella* Riley, and described in the Fourth Report on Insects of Missouri, p. 46, by the late Dr. C. V. Riley. The Lesser Apple-leaf Folder itself was described by the late Dr. William Le Baron, State Entomologist of Illinois, many years ago, and with his description he gives some observations upon the effect of the caterpillars in the nursery of the late D. B. Wier, of Lacon, Illinois, in 1870. In this case the insect proved a veritable scourge, hardly a green leaf being left on some of the younger trees in the nursery row. The manner in which the leaves are attached together over the tips of the young shoots, forms a covering that sheds ordinary arsenical mixture like an umbrella, thus rendering these measures of little effect unless applied very early, before the caterpillars have become sufficiently large to weave the leaves together.

The extent to which these insects will occur next year cannot now be determined. We have reared one natural enemy, a parasitic fly but this alone will not be sufficient to hold the enemy in check.

Another insect, that has been causing nurserymen in the southern part of the state considerable trouble, is the Lined Cottonwood Beetle, *Lina scripta* Fab., which attacks the foliage of young Carolina Poplars and works considerable injury to the very young trees in the nursery row. This trouble seems to have been growing more serious of late, both in Ohio and Indiana, and calls for help from the nurserymen have been coming in pretty freely, as also from growers of the basket willow, which it also attacks. The beetle winters over and with the first opening of the leaves, deposits its eggs on these, in clusters, and these hatch to young larvæ which with the adult devour the leaves, and as there are probably three broods each season, the trouble was no small affair.

This year, however, help has come from an unexpected quarter, and so complete has been the effect that no trouble has this season been experienced. The help is in the form of great numbers of what we know as the Spined Soldier Bug, *Podisus spinosus* Dallas, one of our large Stink bugs, which also deposits its eggs upon the leaves of the Carolina Poplar, and as soon as the young bugs are hatched they at once begin to feed upon the young of the leaf beetles and destroy them. I have seen the young bugs clustered around an egg cluster of the beetle, and as fast as the young appeared they were promptly killed by their relentless foe. Not only this but the old bugs will travel about over the leaves, and as soon as they spy out the young of the beetle, they will attack it and sucking out the juices soon leave nothing but the shriveled skin. Nurserymen in the vicinity of Dayton and Troy, Ohio, and in Indiana report no injury this year, and but few beetles have been observed, which indicates that there will probably be little trouble from this source another year.

The Asparagus beetle, *Crioceris asparagi* Linn., is steadily making its way westward across the northern part of the state, and now occupies the territory east of a line drawn from a point some distance west of Cleveland to East Liverpool, on the Ohio River. Freshly-slacked lime scattered over the asparagus plants when the dew is on is said to be an effectual remedy for this pest, and spraying with Paris green and water can be done as soon as the shoots are unmarketable.

Another matter that will interest many, if not all of you, is the introduction of parasites from Louisiana to destroy the eggs of the Harlequin Cabbage Bug, *Murgantia histrionica* Hahn. Numbers of the parasitized eggs were received from Professor Morgan, of the Louisiana Agricultural Experiment Station, and placed in the hands of Mr. Robert W. Turpin, Newton, Ohio, who has reported that the parasites reached him in good condition, and that he had liberated them under the most favorable circumstances, and we hope for good results therefrom.

The San Jose scale is, however, the most expensive pest with which we have to deal, both as regards time and money. Between watching over the various outbreaks of this pest, scattered as they are over twenty-three counties, and nursery inspection, about four months' time of one person is consumed, and this is the proportion of time devoted to this work during the last year. Of the nurseries in the state we have inspected forty-nine, and while the owners have borne the expense of these inspections, the time required for making them was diverted from legitimate Station work. It is costing both time and money to keep all of these outbreaks of San Jose scale under the system of surveillance that I have established, and it is being done at the expense of the fund for special work in entomology, but public safety seems to demand that it be done, though the additional information that we get out of it comes pretty high. The number of cases, however, that we have discovered, in their incipiency, and either checked or eradicated them before this pest had spread to adjacent premises and necessitated such destruction of property as has been necessary on Catawba Island, plainly shows that for $1,000 per annum that my department is receiving for carrying on this work, we are saving the people ten times that amount, as regarding this insect alone.

The statement has been made that this scale is "not a particle more destructive than many of our native species of injurious insects, or than those to which we have become used," but anyone who is at all familiar with this pest understands that this is not the case, and that we have no other insect that is so deadly in its effects and so difficult to detect until it has become fully established, and we certainly have nothing in Ohio which, if it gets onto a tree, is as sure death, unless it be Dendroline, which was so highly recommended in the east some time ago, for the destruction of insects on fruit trees. Besides, such talk as this only makes the enforcing of remedial and protective measures more difficult. I am free to admit that, some day, there will probably natural enemies spring up to check its devastating work, but who shall estimate the losses that will occur to our fruit industry while nature is bringing this revolution about? This scale is in all probability the introduction of man—an artificial introduction—and if we wait for nature to right a disobedience of her laws, we are likely to spend some time in the waiting and it will be pretty costly waiting at that. There has not been an outbreak of the San Jose scale in Ohio, that has been exterminated, except where the infested trees have all been taken out and burned. It can be held in check by spraying twice a year with the whale oil soap mixture, but extermination is entirely another matter, and if our fruit growers are to be obliged to do this every year in the future, the business of fruit growing will either be ruined, or the public will pay enough more for the fruit consumed to cover the additional expense of treatment of the orchards.

I believe that I was the first to call attention to the possible use of kerosene in destroying this scale, without injury to the trees, and I own that for a time I hoped that this could be done, but our experiments up to date indicate that, except on the apple and some of the more hardy of the other fruits, and in cold weather, it is exceedingly dangerous to attempt its use, and until we have had time to make further investigations, I wish to warn you against its use, otherwise than as above indicated. I am much disappointed in the outcome of this matter, but it cannot be helped, so far as can now be determined.

In the matter of nursery inspection, though it is a difficult task at present, the labor and risk will decrease each year, as the system is carried out, as, if the San Jose scale escapes notice one year it is almost sure to be detected the next. If time is allowed, a nursery can be inspected with sufficient care to almost insure the detection of either this or any other *seriously* destructive insect that we have at present in this part of the country; but the trouble is that several states have enacted laws, recently, that demand certificates of inspection, such as no man who has a reputation to lose can afford to issue to any nursery, in any state. Injurious insects are present in every nursery, and it is useless to try to prevent their presence, as to do so would necessitate some changes in the laws of nature, which we do not control.

Unless certificates of inspection mean practically what they represent, they are not only worthless and misrepresent the nursery stock which they cover, but they serve to bring the whole system of nursery inspection into disrepute, and place a premium upon dishonesty. Unfortunately, the wording of our certificates of inspection has been shaped by the Maryland law, which insisted that all stock shipped into that state should be covered by a certificate stating that such stock was free from San Jose scale and all other injurious insects. With but one or two exceptions, entomologists refused to issue such certificates, on the ground that they could not make any such definite statements. Then it was decided that it would be sufficient if certificates read "apparently free" from such and such insects and diseases. This is altogether a different matter, and so long as these insects were named in the certificate, and did not include such as are scattered everywhere, broadcast over the country, they could be issued by entomologists, as, with sufficient time for a careful inspection, one could be reasonably sure that no dangerously destructive insect would be likely to escape detection. But now comes a demand for a certificate to comply with a state law, which must read something like this: "I Hereby Certify that I have carefully inspected the Nursery Stock in possession of........................ of.., and find said stock apparently free from San Jose scale, or other injurious or destructive insects, and also apparently free from infections or contagious diseases." Now, as applied to the stock that was actually inspected for San Jose scale, and was in the hands of the party or firm to whom the certificate was granted on a certain date, this is all well enough, but no one is silly enough to for a moment suppose that there is a single nursery in any state that does not contain more or less injurious insects, injurious but not necessarily seriously detrimental or destructive. If the possession of such a certificate as this were to be made imperative before a nurseryman could ship his stock, and inspections were made with the degree of care that should characterize inspection, it would close every nursery in the United States. Whenever the San Jose scale becomes as generally distributed as the Woolly Aphis of the apple, or the Oyster-shell Bark-louse, or the Apple Scab, then it will be just as fruitless to attempt to prevent its spread as it now is to offer any obstruction to the diffusion of any of the above by attempting to prevent the sale of trees from nurseries whose condition is not misrepresented. By all means specify the San Jose scale in every certificate of inspection, and to this it will be a good plan to add the Black Aphis of the Peach and probably the crown gall, but stop with these, and do not attempt to make a nurseryman represent his stock in a condition of perfection that he and everybody else knows is impossible. In both, the bill that was formulated in Washington, last March, at the convention which met there at the call of this Society, and the bill drafted by the committee on legislation of the National Association of Nurserymen, apply the term "dangerously injurious insects or diseases," with the understanding, in both cases, that the Government, through the Secretary of Agriculture, shall designate the precise species that shall be specified in Government Certificates, and in order that he might not go to the extreme that some states are doing, it was thought best to place this limit upon him. If either one of these bills is passed, or a combination of both, it will not suffice that an insect or disease shall be simply injurious, but it will have to be one which endangers as well as affects. This is but simple justice to the nursery business of the country. I wish here to state that if future inspection in Ohio is to be made with the sole idea of dodging state laws, or that certificates are to be worded simply to conform to such laws, regardless of accuracy in the statements made therein, I beg to decline having anything more to do with the matter. If instead of being a reliable, protective measure, nursery inspection is to become a farce, well and good, but please remember, once and for all that I am strictly not in it.

The bill recommended by the Washington Convention aroused some opposition from certain quarters, based, as we believe, largely upon misapprehensions. We have thought it best to overcome this opposition as far as possible, as unity of sentiment on the part of all interests affected is greatly to be desired. In pursuance of this idea, the Chairman of the Executive Committee accepted an invitation to address the National Nurserymen's Association on the subject, at St. Louis, Missouri, early in June. On first appearing before the Legislative Committee of this body, there appeared to be considerable opposition to the Washington bill manifested, but after full discussion, it was found that the aims of both the Washington Convention and the Nurserymen were practically identical, and at the request of the Legislative Committee of the Nurserymen's Association, Mr. Alwood assisted in the preparation of the bill which was afterwards signed jointly by Mr. Alwood and the Committee, and endorsed by the Association without a dissenting vote.

A comparison of the two proposed measures, both printed in full in Bulletin 81, of the Ohio Experiment Station, will show practical unity of purpose as to the main features, and by request, I myself presented a paper at the recent meeting of the

American Pomological Society, analyzing the features of the two proposed bills, and pointing out the way whereby all of these minor differences could be readily harmonized.

Acting in a spirit of mutual concession, it was arranged between Col. Watrous, Chairman of the Legislative Committee of the Nurserymen's Association, and the Chairman of the Committee of the Washington Convention to hold a joint meeting of the two Committees in Washington, and as far as possible act together in the matter of recommendations as to the nature of the bill that is to be introduced into Congress at the beginning of the coming session.

A commendable spirit of concession and getting together has characterized all later proceedings of conventions and other bodies interested in this subject; and we believe that the great majority are a unit in desiring the enactment of a sound, sensible measure, that will act alike on every one and, as far as possible, protect all interests alike.

Returning again to Ohio matters for a moment, I would like to call attention to the desirability of this society, at its present meeting, taking some action in regard to the preparation of a bill providing for nursery inspection, and amending the present bill in its relation to the treatment of San Jose scale and the duties of Township Fruit Commissioners, in matters relative thereto.

The President: There is probably no subject that is of as much interest to horticulturists in the United States, as the one that has just been presented to us this morning by the two speakers. The matter is before you for discussion, and we hope that you will hold closely to the subject and make your remarks as concise as possible. Mr. Owen has been referred to as having some very important information in regard to this San Jose scale out-break.

Mr. Owen: I can only tell you briefly a little experience we have passed through in the treatment of this San Jose scale. We discovered it at our place last December a year ago. After the meeting of our Farmers' Institute, at the suggestion of the Institute and our Horticultural Society, Mr. Hadden, on whose place the scale was found, was induced to send some specimens to Professor Webster, and about the next train we found Professor Webster in our midst and he took in the scale situation. We are sorry to say that it covers an immense territory there, and it has been very disastrous and expensive in treatment up to the present time. At this time it covers probably 150 or 200 acres, which you will see is in the most valuable part of our island.

The means of dissemination we are told is principally by the wind, which we have found is probably true in this case. This is about the center of the infested area (indicating) and it is gradually spreading, as it has been in there for eight years. The prevailing winds at our place come from the south-west, which will probably explain the elongated appearance of the area infested.

There are cases where we know it is also distributed by some other means, probably as Professor Webster has stated, birds or insects, more probably the birds I think, because in this locality here there is a woodland bordering along here and the outskirts of this, (indicating) especially where we find birds' nests there we find the scale. On some of the trees, possibly only a limb will be infested badly and on others the whole tree.

The President: Forest trees?

Mr. Owen: No, these are peach trees. There was a little block of about one-fourth of an acre of forest trees which were taken down and destroyed, but we didn't find it in there.

There is one little outbreak beyond this limit here, (indicating) about one-fourth of a mile, evidently taken there by the birds, a single limb of a single tree was simply coated. That limb was trimmed and treated, and in the summer—it was some time in July or August—we found some scale there on this same limb. Then we cut it off, and since that time no scale has been found.

Now, as for the treatment in here (indicating)the orchards that were very badly infested were condemned and uprooted. Probably 1,500 or 2,000 were condemned and destroyed; then beyond that, through the advice of Professor Webster—it was a case of kill or cure anyway—we ordered a treatment by kerosene for the worst infested district, which probably took in a thousand trees. The trees were very severely pruned in the first place, which would impair their vitality some, and then kerosene could not be applied except under the most favorable conditions. As the Professor stated in his experiment made in the southern part of the state it was applied under very low temperature, while with us it was only about the freezing point, and in that way, the evaporation was rapid, and enough was absorbed by the tissues to be destructive to the trees treated in that manner, except the pear and apple trees. I hardly believe that kerosene in itself is a complete remedy, for in an apple tree, that I know was thoroughly drenched and sprayed with kerosene and afterwards given a treatment of whale-oil soap, we still found scale; only in a very limited quantity, however.

The scale still exists there but I think in far less quantity than last year. A few years ago in the extreme western part of Mr. Hadden's orchard we thought possibly there was scale—he sprayed his whole orchard—but this season we were able to find isolated cases. Everyone knows how hard it is to detect them, and it shows that they have been dropped there this season.

Mr. Carruthers: Please sir, how do you detect them?

Mr. Owen: With goods eyes.

Mr. Carruthers: Are glasses necessary?

Mr. Owen: It is not practicable to always use a glass for the detection of them. Of course a lens is very good but it is impossible to use a lens in the general inspection. It would take a long time to go over a limb with a little hand glass. We have too big a territory there to go over in that way.

Mr. Sweet: Can you detect them by the color?

Mr. Owen: No, you have to look along until you find Mr. Scale located on a limb.

Mr. Sweet: Is there any other way to discover them?

Mr. Owen: No, except as Professor Webster has said where the scale is very profuse and the bark has a rough scurfy appearance as though covered over with a coat of ashes. In the treatment, in our district the past year, we had to use over ten tons of whale-oil soap, which is pretty expensive. It costs, laid down, about $75 a ton. Now the treatment costs as much more, besides the loss of the trees that many of the owners were subjected to. Last year it was a very easy matter to induce our people to go ahead and prune the trees and trim them back severely, and it was one of the most favorable years for the treatment, simply because we knew we were not going to have fruit this year and they could well afford to cut the tops back and give them the very best treatment. While, as I stated, it was a very easy matter to induce them to go out and do the very best possible, last season, we didn't impress upon them that the scale would probably be there this year. They made this treatment using the ten tons of whale-oil soap and five barrels of kerosene, but we still found the scale in there this year. Now people feel differently. There are some who are ready to go ahead and do what is proper in the treatment, and even cut out their orchards if necessary, while others feel differently and absolutely refuse to treat those orchards, except the trees that we can detect the scale on, and everybody who is acquainted with the scale at all, knows how difficult it is to locate it. Professor Mally showed one instance of breaking back the bud of the limb and there was the scale in between the bud and the main stock. So you see the conditions which confront us, and under the present law, I doubt whether we can force them to do otherwise than to spray.. But it is absolutely necessary in a treatment of this kind, to treat every tree in that district and every tree in the surrounding orchards. We have got to have an amendment to the law or the fruit industry of our Island I know is ruined. I think that is the situation that confronts a great many sections throughout this state.

Mr. Carruthers: Is that Catawba Island?

Mr. Owen: Yes, sir.

Mr. Harrison: I think the point last made, a very important one, that there should be somebody with authority to enforce the treatment of all orchards liable to be infested with San Jose scale. As I understand it, nobody has any authority in the State of Ohio, to even examine an orchard, except the Township Fruit Commissioner, and I would like to know how many Townships in the state have fruit commissioners. There is not interest enough taken in the majority of townships in the state to have a fruit commissioner appointed. There ought to be some state officer that is authorized to examine all orchards and to enforce the treatment necessary to the destruction of the pest. What called my attention more particularly to this, I met a man down in the middle part of the state, who told me that the Experiment Station was going to send a man down to examine his orchard, and he said he wanted to find what authority this Experiment Station had to come on his premises and examine for that insect, and he said if his attorney told him the truth, and they came on there, they could be arrested for trespassing. If that is the case, we certainly need a law to bring persons to terms who are not inclined to destroy or prevent the scale.

Mr. Whitney: I do not think this person is intending to take advantage of what he perhaps thinks is the law, but if that attorney is correct, we certainly need somebody with authority to go into orchards and nurseries, or wherever it may be, and enforce the treatment of orchards surrounding infested sections. It seems to me that there should be something done this winter in the Legislature to give some state officer this authority. Here is a local man, a township fruit commissioner, and he wants to keep on good terms with his neighbors, and he don't feel like enforcing the law and making everlasting enemies of his neighbors; therefore, we need somebody that has neither fear nor favor, to enforce the law. I think there should be a great deal of preparation made to try to destroy this San Jose scale.

The President: That is the right sentiment. I would like to say, before this discussion goes any further, that it would seem to me that we better try to find out what is the best thing to do and then appoint a committee and try to carry out that thing. I believe that it is necessary to have just as large an appropriation to put this matter on some footing as it is with the contagious disease act of our animals, and I believe it ought to be put on about the same basis and carried out about in the same manner. I took that position at Washington convention and I have taken it here at our own society. I believe that we ought not to ask these people to destroy their trees entirely for the benefit of those who are not affected, without receiving some remuneration for it. I do not know how you can carry out this matter unless you adopt some such principle. Perhaps I am wrong, but it strikes me that this is a point it would be well to consider. Let us try and find out what we want and not be afraid to ask for it.

Mr. Sweet: You have expressed my sentiment exactly. Only there are a great many people that think that this is all for the fruit-growers. Now, it interests the consumer just as much as the fruit-grower. It interests the whole public, and I was glad to hear Professor Webster speak of the yellows and black-knot. We should have authority somebody should have authority as Brother Harrison has said, to do this work, because if it is not the law you cannot carry it out. The other day a man in our county said he would like to see a fruit commissioner come into his yard and compel him to destroy his trees. I want those people that don't have an interest in everybody, in the general public, to be compelled to do that which interests the whole public, if they are a detriment to the public.

Mr. Shirer: Well, after all there is a question, and that question is, has the state a right to pick out a single bug and try to get rid of him at the expense of the others? Now, I seriously doubt the Professor's statement that the San Jose scale has done more injury than any other insect in Ohio.

Professor Webster: I did not say that. I said there is no insect in Ohio that is capable of doing so much damage. And I am able to prove it if you want it proved.

Mr. Shirer: I want to call your attention to something else the Professor said; that because there are no insects this year it is no reason we should not expect them to destroy our crops completely next year. I know one tract of three and one-half acres down toward Cincinnati that somebody had invested $500 in to raise nutmegs, and the little beetles down between Dayton and Cincinnati last year did do an immense amount of damage, probably more than the apple crop in Ohio would amount to for a whole year (Laughter). Another thing, one summer we will not have any of these little pests to demand their share and the next they will come around again. They are simply sleeping somewhere and will be resurrected next year. So I hope you may succeed in getting rid of the San Jose scale, and I also hope if you do you will turn around and help us melon raisers get rid of the bugs that are troubling us.

Mr. Albaugh: The trouble with the San Jose scale, as far as we find it in nurseries and orchards, is that before you know the scale is in the nursery or orchard, your trees have been killed. If the San Jose scale were as big as your fist or the Colorado potato beetle you would have no trouble, but the trouble is that they are so minute in size that hundreds and thousands of trees have been destroyed before the owner knew what was the matter or that anything especially was the matter. So that it requires a great deal more care than a great many other pestiferous insects. On that account it is very hard to find. You cannot see it with the naked eye, unless you have eyes as sharp as Professor Webster's. The ordinary fruit grower and nursery-man must have a glass strong enough to enlarge the insect so it can be seen.

This San Jose scale has done more harm to the fruit growers and nursery-men than any other that I have any knowledge of and this is my fortieth year in the business. The entomologists met at Washington last spring and drafted a national law, and the nursery-men at St. Louis demurred from two or three points in that national law that the entomologists prepared.

The President: That wasn't a convention of entomologists. I beg to correct you in that respect.

Mr. Albaugh: Well, I believe there was Mr. Hobbs, of Indiana, Mr. Barry, of New York, and Mr. Lindley, of North Carolina, our President here, and probably Mr. Harrison there, and there were several other nursery-men there.

The President: We tried to have it a representative meeting.

Mr. Albaugh: Well, while the term entomologist would be too strong, still there were more "bug" men than there were at St. Louis. So we can say one was a representative nurserymen's convention and the other a sort of entomologist's convention. After spending from 12 to 16 hours working on that committee—Mr. Watrous, Mr. Rouse and your humble servant were appointed a committee to work with the other committee that met in Washington—we formulated a bill which received the unanimous approval of that convention of over two hundred people, with the privilege of adding to or subtracting from it, and just as soon as this Congress convenes it will be presented. The great trouble that seems to stare every nurseryman and every orchardist in the face, is the fact that half a dozen or more states have passed restrictive statutes, whether they are constitutional or not, and this interferes with interstate commerce. So you see there must be some national legislation where proper inspection can be had, and the proper inspection certificate placed on every tree or basket of fruit that will "pass muster." It is absolutely necessary for fruit-growing as well as shipping trees in here, that some national law be enforced, and the gist of this national law that has been framed, is that foreign plants when they come in here, unless they are inspected by a properly recognized officer in the foreign country, must be reinspected before they are planted. The package cannot be opened unless it is opened for inspection and cannot go any place for planting.

Now, if this law should be passed, the Secretary of Agriculture can appoint inspectors, and it is required before you can ship any goods that they must be inspected and have upon them a certificate of inspection that they have been inspected, and that they have passed muster, and are not questioned at all We made no provision in the law for special fumigation of the trees. They can be put in a tight building and fumigated, but you have to be careful that you don't get fumigated with them. This law makes it finable upon transportation companies who will send out trees that have not been properly inspected. It makes it the duty of every transportation company to see that all these packages have the inspection card upon them. Now I happen to be when I am at home the agent of the railroad company, at least they hold me responsible for what is going on, and not very long ago I got a circular from the General Manager of our railroad, giving the gist of the Michigan law and warning me, as an agent of that company, not to ship any trees that had not been properly inspected. The railroad company didn't want to get into trouble. Now here is the Maryland law, and before I shipped trees into Maryland last year, I sent the certificate of Professor Webster to the bug man, of Maryland, and asked him whether that certificate would "go." He didn't know Professor Webster quite as well as we do or his answer might have been different. He said Webster's certificate—is good. (Laughter.)

Mr. Shirer: How about the constitutionality of a national law of that kind?

Mr. Albaugh: Oh, never mind the constitutionality. (Laughter.)

Mr. Miller: It strikes me that by the time this national law is enacted, our trees will all be eaten up. You know how slow the courts are to act, and it strikes me that our business ought to be the amendment of the Ohio law so that we can better enforce the law as we have it. I do not know that our society has a committee on legislation, or ever has had.

Mr. Albaugh: The executive committee has always had charge of that matter. They have always taken that as part of their duties.

Mr. Miller: There ought to be someone to look after the amendment of that law and see that it is introduced at the beginning, when the legislature meets, and put through as soon as it can be done.

Mr. Whitney: It is proper to call attention to the matter a little further in regard to the danger of the scale. Of course many will understand, but many will not understand that the plat on that map,(indicating) does not represent one-half or one-fourth of the orchards or localities where the scale is to be found in Ohio. Those places that have been found are probably all places where it had been for several years before it was discovered. It is in the orchards of people who knew nothing about it until it got so numerous that it attracted their attention.

The President: In view of all this discussion it seems necessary that we take some definite action. The Ohio State Horticultural Society has reason to feel proud of every act it has done in regard to this San Jose scale especially. We have considered it carefully and I believe have not committed any rash act, so far as the society is concerned, and I think we should still maintain that spirit. I would like to introduce the following:

Whereas: In view of the San Jose scale controversy and its proper solution, therefore,

Resolved, That in order to reach a proper and just solution of the subject, a committee of seven members of the Ohio State Horticultural Society be appointed by the President and endorsed by the Executive Committee, of this society, who shall be known as the San Jose Scale and Legislative Committee, and shall serve for one year or until their successors are appointed. All matters of law, finance, insect, pests, yellows, black-knot or contagious diseases shall be referred to this committee.

Upon full consideration the above resolution was unanimously adopted by the Society.

The President: The next subject on the program is the report on Vegetable Pathology, by Professor A. D. Selby.

REPORT OF THE COMMITTEE ON VEGETABLE PATHOLOGY.

By A. D. Selby.

The year for which a summary is undertaken, has been, for reasons which will appear later, one of rather more than average interest to the Vegetable Pathologist. A few salient features of the period, including some prominent diseases, is all that it seems best to discuss at this time.

PEACH YELLOWS AND THE BLACK-KNOT-YELLOWS LAW.

There have been no virulent outbreaks of the peach yellows within the year. Yellows is now known to exist in the counties of Athens, Brown, Butler, Carroll, Columbiana, Coshocton, Erie, Gallia, Guernsey, Hocking, Jefferson, Lake, Lawrence, Muskingum, Ottawa, Portage, Ross, Sandusky, Seneca, Stark and Wayne. That is, yellows is present to a greater or less extent in all the peach growing districts of Ohio. In some districts the disease is local merely. The matter of the refusal of Township Trustees to appoint Fruit Commissioners upon petition was submitted by the Director of the Ohio Experiment Station, to the Attorney-General of Ohio. He gives an opinion to the effect that where black-knot or peach yellows is found to exist, the Township Trustees must appoint such commissioners upon presentation of a petition in compliance with the statute.

He states: "This duty is not a discretionary one, but is mandatory upon them (the trustees). If the trustees fail or refuse to perform any duty enjoined upon them by this act, the proper method to compel the performance of such duty is by a proceeding in mandamus instituted in the Common Pleas, Circuit or Supreme Court." It is also to be understood that the cost of mandamus proceedings may not be paid out of public moneys but will fall upon the trustees personally.

CROWN GALL OF FRUIT TREES.

This dangerous, infectious disease is attracting increased notice. I was called upon, during the year, to examine two orchards near Locust Point, Ottawa county, which well illustrates the great danger of planting stock with crown gall. In those two orchards, containing 1,500 trees transplanted in 1896, I found a very severe case of the trouble. In my judgment about fifty per cent. of the trees in question are either dead or seriously affected with the galls. I am informed that there is litigation over the matter of damages.

WINTER INJURY TO PLUM TREES AFTER SHOT-HOLE FUNGUS.

The writer pointed out, one year ago, in his report, the prevalence of shot-hole fungus and leaf-spot on plums and cherries, but did not anticipate at that time the serious winter consequences that befell the plum trees thus affected. In three and four year old orchards of Ottawa county, fully one-half the trees were killed outright or were so severely frozen back as to be of little value. I have in mind an orchard near Elmore that suffered in this manner, but with unequal effects on different varieties. In order of worst injury the sorts are: Beauty of Naples, Niagara, Bradshaw, Reine Claude, Genii, Lombard, Shipper's Pride and Yellow Gage, the latter least injured of any. Nearly fifty per cent. of the trees were practically destroyed. This orchard was attacked by the shot-hole fungus in 1896. Another large orchard near La Carne showed some striking results. The trees had been most of them defoliated about the first of August, 1896, and as reported to me, with specimens by the owner, had put forth new leaves and blossomed afterward. The leaves sent for examination were abundantly spotted with shot-hole fungus. The same trouble had been present to a limited extent in 1895. During that season the orchard was in corn and this fact was thought, at the time, to favor the spread of the shot-hole fungus. The fungus was neglected and greater injury followed.

There are three portions of the orchard. In one, the trees are six to eight years planted, in another three years, and in another one year only from transplanting. Several of the eight year old trees were destroyed through freezing of the trunks on south, south-west and east sides, and the separation of the bark. This injury is shown in the photograph; it is not with the variety photographed, Coe's Golden Drop, an unusual injury in winter, but the severity is not common. Out of ten trees of that sort, five or six were badly injured and three a total loss. There was a good deal of killing back on the large trees of other varieties. This was marked on six year Lombard and on other sorts as well. The younger trees suffered still worse. Among the three year trees practically all of two varieties, Bradshaw and Imperial Gage, were killed to the snow line. You will remember that at the time of the severest cold last winter, quite a heavy snow lay upon the ground. The snow generously shielded the bases of the trees, but all that part of the trees above it was badly frozen. Even where the trees put out new growth, the interior of the old wood seemed brown and dead. It is scarcely likely that any of the trees of these sorts will survive except by renewal from the base, which is possible with a part only. The second photograph gives a view of a row of three year old Bradshaws which suffered the described winter killing after shot-hole fungus.

Among the one year tree, Stanton was entirely destroyed, the interior of the trunks being brown; Reine Claude and Genii were damaged. Killing back occurred in all the three year old sorts, including Bradshaw, Imperial Gage, Lombard, Niagara, Moore's Arctic, Shipper's Pride, Pond's Seedling, German Prune, and Yellow Egg, named in order of injury. Those worst affected are named first. The Japanese sorts were not attacked by shot-hole fungus and were not winter killed.

EXPLANATION OF THE WINTER INJURY.

The explanation lies in the late soft growth and general immature condition of the wood. As has been stated, the trees put out new foliage after the fungus had destroyed the first crop of leaves. All the growth made after August 1st remained unripened, and since all parts participated in the growth, all were alike susceptible to freezing. Why the sorts like Coe's Golden Drop, Bradshaw and Imperial Gage should suffer more severely than other varieties, under the same general conditions, remains to be explained. Difference in habit of growth may account for it, or it may be a matter of varietal hardiness which may still be another name for the first suggestion. Throughout northern Ohio this severe injury occurred upon plums that had been defoliated by shot-hole fungus. It appears to be a new phase of the shot-hole fungus question and of such importance as to challenge study. The prevention lies in the avoidance of unripened conditions. This means in these cases the prevention of the fungus by spraying, which is secured by about three applications as per the spray calendar. An additional spraying may sometimes be required. The spraying brought out, this year, an interesting profit. Older leaves on sprayed trees remained uninjured till the end of the season, while the leaves which were upon growth made after the last spraying (June 16,) were taken off by the shot-hole fungus. It is quite likely that this is rather an exceptional occurrence and one that will not happen under average conditions.

OTHER FORMS OF WINTER INJURY.

It has long been known that apple trees may be destroyed during severe winters after there has been late growth of the trees. This growth may come when fall rains succeed a summer drouth; too late cultivation may induce the same condition. In fact it is liable to result when any circumstances cause the trees to enter a severe winter with but partially ripened wood. Popularly this trouble is called "sun scald." Protecting trunks of susceptible apple sorts with straw mats during winter would seem to offer some relief. An interesting case of winter injury to the trunks of one year old peach trees (one year from transplanting) was observed at Gypsum. These trees of several varieties, had received rather late cultivation and made a good deal of late growth in 1896. The amount of injury of the various sorts was as follows:

	Injured on Trunk.	Killed.	Total.
Smock	30 per cent.	....	30 per cent.
Salway	68 " "	8 per cent.	76 " "
Geary's Hold-On	4 " "	....	4 " "
St. John (yellow)	12 " "	....	12 " "
Lemon Free	0 " "	0 per cent.	0 " "
Brenner's	0 " "	0 " "	0 " "

Here it seems that the very late varieties of fruit go with a late maturity of growth. Low headed trees of each sort were less injured than those headed high leaving a long, bare trunk.

A SPRAY CALENDAR.

A Spray Calendar was prepared for the last annual report by the Station Horticulturist, Entomologist and Botanist, as suggested at the previous Annual Meeting of the Society. This calendar, copies of which are upon exhibition, was also issued as a supplement to Bulletin 79; the Bulletin named, dealing with matters to which the calendar is relevant. This calendar has been used for a season and if found insufficient, the lack can be pointed out. It does not cover a few diseases which it would be useful to have included for the coming season. The Station still has enough copies of the Bulletin and Calendar to supply ordinary demands. These will be sent, upon application, to persons desiring them.

PEACH LEAF CURL AND APPLE SCAB.

The rainy weather, with coincident low temperature during the month of April and much of May, gave favorable conditions for these two serious fungus pests.

They were not at all slow to take advantage of them. Not since 1893 had there been another season so favorable as the present to the peach leaf curl, *Exoascus deformans* B. Many varieties including seedling trees, where untreated, were almost stripped of leaves during June last. These trees had made very little growth July 1st, while trees of the same variety upon which curl had been prevented by use of Bordeaux mixture, had made lengths of two feet or more of new growth. Without entering into a detailed statement I may say that the results of three years experiments show the efficacy of spraying for leaf curl of the peach; spraying in 1896 was also efficient to prevent the curl without treatment in 1897.

In the Bulletin of results, now in preparation, I shall expect to point out from April weather and previous year's record, the probability of destructive leaf curl development. At present I do not see what more we can do than to offer an efficient remedy and point out the times when it must be used. From the abundance of the fungus to live over I am prepared to expect a large amount of leaf curl in 1898, though whether or not this amount will exceed that of 1897 will depend upon the spring conditions as indicated. The present season's experience with leaf curl in that part of Michigan where the peach buds survived the winter, should not be lost upon out Ohio peach growers. In western New York, too, the size of peaches of certain varieties, was very much reduced. In Ohio, the absence of fruit left the trees an abundance of recuperative energy, which was apparently well applied after July 1st.

It is worthy of note that peach twigs were frequently distorted and killed by the curl fungus.

Allusion has been made to the favorable weather for leaf curl; this means that it was just ideal for apple scab. While this was "the year" for a good apple crop in southeastern Ohio, the outcome is a very short one. Apple scab appears to be chiefly responsible for the short yield. The Station apple orchard showed to good advantage what spraying did this season; there are several that did not spray this season who now wish they had undertaken it. As with leaf curl, following a season of bad scab or under the conditions of rainy, cool weather in April and early May, I am convinced we must make up our minds to a turn of apple scab. And it must not be forgotten that in a season like this, the omission of the first spraying may render the subsequent treatments nugatory or almost so. The apple scab fungus causes the small fruits to drop and is a far more mischievous worker for a bad set of fruit during cold northeast winds and rains than the lack of pollenation so commonly accused of this sort of work.

OTHER DISEASES.

Pear and peach fungi revealed where fungicides were absent. The currant leaf spot on the other hand was much less destructive than last year, even where no treatment was applied. In this connection I may record the discovery of a new currant stem disease, *Tubercularia*, in Sandusky county. Dead canes in the clump should be examined for this pink incrusting fungus. Celery and other such crops were freer from serious diseases than last year, although onion smut is found near Berea, and cabbage club-root is on the increase. Muskmelons and cucumbers were seriously affected by fungous diseases, but of them and tomato diseases a separate paper is to treat. Potatoes were badly blighted in many sections; the crop here at the Station was fine. The potatoe blight problem bears many evidences of being a badly mixed one. Nothing short of good results every year, it seems will suffice to remove the crop of Ohio doubts on the efficiency of spraying potatoes with Bordeaux mixture.

Asparagus rust has not been found, as yet, in Ohio. The white mould *Cystopus Portulacæ*, has continued to destroy the garden purslane, and with aid from the Entomological department in the person of a small leaf miner, has given the lazy gardener a chance to turn over a new leaf for next year. I expect to turn over a good many leaves in seeking the crop of fungous pests for your next annual.

The President: Mr. Miller has prepared a resolution which has been suggested by several of the members.

Resolved, That the members of this Society desire to express to the Director and staff of the Ohio Experiment Station our sincere thanks for the active and efficient labors of the Horticulturist, Entomologist and Botanist of the Station. We realize the absolute and imperative necessity of thorough and continuous care and labor in these fields. The fruit grower finds his business threatened by a host of insect and fungus foes, and we feel that we must have the aid of science to enable us to successfully continue the struggle for existence.

We therefore wish to thank the Station for what has been done and to urge a continuance of this work on a greater scale than ever before, and that more funds be allowed for this purpose. We feel that every dollar thus expended by the state will be returned many fold in increased crops of fruit, flowers and vegetables.

Mr. Carruthers: I rise at once to heartily second this resolution, and I would like further to suggest that a copy be sent to the Ohio Farmer, if possible.

Motion carried unanimously.

Mr. Carruthers: I took special pains with some of my potatoes, planted them in an old strawberry bed, but the continual rain and cold weather drowned them out, so I took pains and planted a later crop in my muck. I watched for the blight. I used Paris-green and Bordeaux mixture together. I mixed them together all the time, and I think that is an idea sprung up here in this institute. I noticed all at once in my promising potatoes in the muck the top leaves began to wilt and drop down. I said this must be the beginning of the blight. They say to us, "Now, if the blight has started, it is no use spraying them. It must be prevented. You cannot kill it." But I got after it with my mixture, Paris-green and Bordeaux, and those leaves dried up, but I got a fine growth of potatoes. I got ahead of it if it was the blight. Nearly every top leaf was turned over and I just caught it there. I would like to know what was the matter with the potatoes.

Professor Selby: It is a little difficult to diagnose a disease when you don't see the patient. The symptoms are the beginning of ordinary early blight, but whether that would have been arrested without the treatment is a thing we could not tell. What would have happened without the spraying is an uncertain question.

Mr. Carruthers: I came to the conclusion that I must not be scared too easily about quitting this spraying.

Professor Selby: That is a good point. There are a good many cases where I am convinced that we can effect a very considerable good even after the beginning of the symptoms, although I do not think we can effect the maximum amount of good by putting off the treatment until the blight is started.

The President: It might be well for me, and I think perhaps the proper time, to say to you this morning that the State of Illinois has deemed our meeting of sufficient interest and taken sufficient interest in the work of horticulture to send one of their most able horticulturists as a delegate to this convention, and I have the pleasure to introduce to you this morning Professor Riehl, of Illinois, and I extend to him the privileges of our Society in every way, and hope that he will be one with us and take part in our discussions.

Mr. Riehl: Mr. President and Gentlemen of the Society: At the outset I want to say I am not a professor; I am not a general, a colonel or a captain. I am simply Mr. Riehl, a horticulturist, and I will state that as long as I live I never hope to do anything to be dubbed with any title.

I am glad to be with you, gentlemen. I have an acquaintance with some of your members by meeting them at other meetings, and some of you I have known through your writings and reputations that you have through the reports of your meetings, which I have from time to time received.

I do not know that I can say very much. We are in about the same boat that you are. Those who are in this business for the money that is in it have not found very much money in it the last few years. However, we think that we see better times before us. There have been reasons why our business has been down. Everything has been in that way. Our products are used largely in the cities by the laboring classes. They are the best feeders. The rich people use the fine products; they use them all the time, but the amount which they use does not cut a very large figure in the markets. That has been one factor. Those who were the chief consumers of our products have had to curtail and use those articles that they could get for the least money and that gave the most nourishment, and the result has been that fruit has not been as largely consumed as it should have been.

Another factor that works in this is that the farmers have not been prosperous. In the beginning when we went into fruit-growing they ridiculed us.

Well, when times got hard for the farmers they saw that the horticulturists were living better, they had better homes and better surroundings and were not "pinched" like the farmers, and the result was that a great many went into horticulture or fruit growing. They put out large plantations of raspberries and blackberries and peaches, and the result was that when they got their crop they would have large quantities together. They would put them on their wagons and the juice would run out and stain the wagons, and they would go to the cars and load them right in on top of our good fruit and the juice would run down over our fruit and our cases would be stained just like theirs, and the result was that their poor fruit sold for just the same as our good fruit. They made no money and they ruined our business. The last few years the fruit growers in southern Illinois have been just as poor as the farmers were. Now, wheat has gone up and the result is that these folks are going back to their old business. They have made no money in fruit growing, and the result is that we will have less competition. We think the outlook for the small fruit grower is a great deal better than it has been. So we think that times are better, and I think that it will be so with us.

I shall be glad to take part in your deliberations whenever there is any subject up that I can give you any information on. There is this, however, against it; you are all away in the northern part of Ohio and I am from the southern part of Illinois, which is a very long state, and our interests are not very much in common. However, I hope to get some information to carry back home that will pay the society for the expense of this trip. And while I am up, I wish to say that our meeting will be held on December 28, 29 and 30, at Springfield, Illinois, and we shall be glad to have you appoint a delegate to meet with us at that time, and we will do the best for him that we can.

The President: We have reached the bottom of the list on the program for this afternoon. I might say, however, that there is a very important part left off of last evening's program, "Green-house Miscellanies." We haven't time to take it up now, and perhaps we might as well adjourn.

Professor Selby: I would like to detain you just a moment. There is a very lively interest in the question of sugar-beet analysis. Now, as the analysis has been going on in the basement of chemical laboratory, and as several have made inquiries and have expressed a desire to know something further about the process of analysis, I will say they can have the process explained to them at once with less expenditure of energy on the part of the person explaining, than if you came in groups of two or three, and to that end it is proposed to have an illustration here with the polariscope and such other additional apparatus as is necessary, at 12.30 Standard, when a few minutes can be taken up in the explanation.

And thereupon a recess was taken until 1 o'clock p. m.

AFTERNOON SESSION.

Thursday, December 2d.

Convention was called to order at 1:30 by the President, who announced that the questions in the question box would first be in order.

The Secretary: There is but one, Mr. President: "Will the apple scab disease come again next year?"

The President: Mr. Shirer, you may answer that question.

Mr. Shirer: Will the measles come again next year? (Laughter.)

The President: I will call upon the Secretary to read some letters which he has received.

DELAWARE, OHIO, November 17, 1897.

To W. W. Farnsworth, Secy., Waterville, Ohio.

MY DEAR SIR: Your favor of the program is received, notifying me of the annual meeting of the Ohio State Horticultural Society, December 1st, 2d and 3d, at Wooster.

I also received your favor a few days since in regard to grafting the grape, to which I did not reply at once, as I did not feel quite certain that I should be able to leave home at that time. I will say however, that I think that anyone familiar with ordinary cleft-grafting could illustrate the subject fully as well as I could. Doubtless you could do it, even better. The Bushberg Catalogue, of Bush & Son & Meissner, gives very full and accurate descriptions of the various methods of grafting the vine, the most of which I have tried; but have found none better or more successful than the common cleft-grafting if carefully done. George Husman's "American Grape-growing and Wine Making," has a chapter on "grafting the vine" that seems to cover the whole subject, in a plain and partial way.

I cannot now say whether I shall be able to be present with you at Wooster, as much will depend upon the weather. Last year I went as far as Columbus; but had to return, having already contracted a bronchial trouble which lasted till near spring. So far, this autumn, I have been as well as usual; but I find myself obliged to be more careful than when I was younger. I notice your request about membership dues and will enclose the same. You have my best wishes for a successful and profitable meeting, and I beg you will extend my kindest regards to my old friends and almost life-long members of the Society, who still have a warm place in my heart and memory. I cannot expect to be many years longer either an active or a passive member; but shall always feel a deep interest in the old Society and its members and have no doubt but its influence and usefulness will grow and increase with each returning year.

Truly Yours,

GEO. W. CAMPBELL.

The President: We will now listen to the report of the Secretary.

SECRETARY'S REPORT.

Brother Horticulturists and Members of the State Horticultural Society:

At the close of another year of our existence, as a Society, it would seem proper that we review briefly some of the more important achievements of this Society since our last annual meeting.

At our February meeting two years ago at Dayton, after hearing the series of articles (as arranged in the program) by Prof. Webster, on "The Introduction and Dissemination of Injurious Insects," Dr. O. W. Aldrich on "Proper Future Legislation Thereon," and Prof. W. R. Lazenby on "Best Legislation Regarding the Introduction and spread of Weeds, Insects and Fungi." The Committee on Legislation, (composed of the authors of these papers appointed in February, '95) recommended among other things, that the secretary be requested to correspond with the secretaries of all the other State Horticultural Societies, and request them to bring before their Societies, the question as to the propriety of the appointment of delegates to a national convention for the purpose of considering means of preventing the spread of noxious insects and fungus diseases by appropriate state and federal legislation.

This was done, and at our last annual meeting at Athens, the president after announcing that every change in the Black Knot and Yellows saw which had been recommended by our Society, had been made by the legislature, urged the Society to continue the agitation in favor of national legislation against our insect enemies

The Secretary reported many favorable responses to his letters, and thought the matter would be generally considered at the annual meetings of the various state societies, most of which were held in December. Soon after the annual meeting, the Secretary began investigating the tariff on fruits, and found that while Canada imposed a heavy tax on all fruits entering their locality, this country allowed berries, bananas, peaches, pears and cherries to enter, free of duty, and taxed apples and grapes only twenty per cent. *ad valorem*, and that usually on an undervaluation.

The injustice of this was so apparent that I at once consulted our member of Congress, Hon. J. H. Southard, who thought we were certainly entitled to as much protection as Canadians received, and assured me of his co-operation in the matter.

I felt that in as much as the country had constituted itself to a protective policy, it behooved us as horticulturists to secure a proper share of said protection without any regard to political beliefs or preferences.

An extensive correspondence was entered into with prominent horticulturists of this and other states in reference to this matter, and also the one of insect legislation, with the result that Profs. Lazenby and Webster were sent as delegates, to the Western N. Y. Horticultural Society, to present both matters there and try to bring them to a focus. Unfortunately, they were thwarted in their efforts by a partisan spirit in the meeting, so that both projects were dropped, as far as official action at that meeting was concerned.

A few days later, however, in response to a telegram from Prof. Webster, I met him and Mr. Wm. Miller at Bellevue, and we drafted the call for the National Convention at Washington. The attendance aud results were beyond our most sanguine expectations.

It was a highly representative meeting, and this broad subject was discussed as fully as the limited time would allow, by horticulturists, nurserymen and entomologists, from Maine to California, and a bill was prepared by the committee, and has since been endorsed with some alterations, by the American Association of Nurserymen, and will undoubtedly become a law.

It was deemed best not to bring the question of tariff on fruits before this Convention, but the subject was agitated privately, with good results.

At our sectional meeting, at Painesville, Mr. J. J. Harrison, President Cushman and myself had been appointed a committee to draft a schedule of duties, and the report of the committee had been indorsed at the various sectional meetings throughout the state.

These circulars were distributed to the fruit growers of different sections of the state.

President Cushman and myself called on Hon. J. H. Southard and obtained an interview with Gov. Dingley in regard to the matter.

Immediately upon our return home from Washington, I prepared and distributed two circulars, one upon each of these lines of work, and sent them broadcast throughout the country and urged the co-operation of all interested. I also addressed a personal letter to every member of the Ways and Means Committee who had the tariff bill in charge, and being kept posted by a friend in Washington (by wire), as to when our products were under consideration, I sent occasional telegrams to our M. C., urging his action in the matter, and I am happy to say it was cheerfully and earnestly given, and I believe with good results.

The comparison of the old and new schedule in back of Report will show what has been accomplished in this direction.

Whether it is best for us to continue our labors in the direction of a duty upon bananas, I will be glad to have the Society decide.

The report of the proceedings of the National Convention at Washington, has been published by the Agricultural Department in bulletin form.

The plan of holding sectional meetings in the different portions of the state was adopted last winter, with results fully equal to our expectations. The meetings were a success, although the one at Millersburg suffered from unfavorable weather, which reduced the attendance very materially.

We believe this branch of work will tend to build up our Society very materially.

Our annual report was printed before the close of these meetings, hence it was impossible to print the proceeding in last year's report. I have a brief report which can be incorporated in next report, if thought best.

During the past year, our Society also had the honor of entertaining The American Pomological Society, at Columbus. Owing to the very poor health of the Secretary of that Society, and an apparent lack of a good working organization, it seemed impossible for this Society to secure any definite information as to plans, desires or program of the Pomological Society, until at the last moment a list of topics to be presented, was obtained by myself and incorporated in our State Fair

Circular, and at once sent to each member of this Society, and to prominent horticulturists in every state in the Union, and to a Republican and Democratic paper in every county in our state, besides to all the leading agricultural and horticultural papers. These circulars from the Ohio Society reached their destination *before the programs sent out by the Pomological Society did.* Our local committee of arrangements, Prof. Lazenby, did everything in his power to make the meeting a success. I have gone into detail in this manner to explain that the lack of enthusiasm was not chargeable to our Society.

We believe the Pomological Society now has a brighter future before it.

The small slips which I prepared last year, giving a list or index of the contents of our Report, and an invitation to join our Society, were pretty thoroughly distributed by the aid of the *ad interim* committee and also by being sent out in plant catalogues, and brought us many new members.

We felt very much gratified in being able to secure a very fine electro of our venerable Ex-President Campbell, which adorns the last Report. It was donated to the Society, upon my request, by the *Rural New Yorker.* It occurs to me that it would be well to secure the portrait of one of our prominent members for each volume of our Report.

Trusting that the coming year may have in store for us as much successful work as the past, I will close.

W. W. Farnsworth,
Secretary.

The President: We will now listen to the report of the treasurer.

REPORT OF TREASURER.

N. OHMER, Treasurer.

1896. In Account with the Ohio State Horticultural Society. Dr.

Date.		To whom paid.	Vouchers	Amount.
Dec.	4	F. M. Webster for services rendered...........	1	$16 40
	4	G. L. Kime, “	2	7 00
	4	S. R. Moore, “	3	7 35
	4	Wm. A. Taylor, “	4	25 50
	4	E. M. Woodard, “	5	22 60
	4	E. M. Buechley, “	6	17 35
	4	S. R. Rockhill, “	7	16 00
	4	L. B. Pierce, “	8	17 85
	4	H. H. Altfather, “	9	17 65
	4	Wm. R. Lazenby, “	10	9 10
	4	E. H. Cushman, “	11	20 35
	4	C. H. Waid, “	12	17 80
	4	N. H. Albaugh, “	13	12 50
	4	W. W. Farnsworth, “	14	121 65
	4	Frank Ford, “	15	20 50
	4	N. Ohmer, “	30	13 00
	4	O. W. Aldrich, “	17	4 60
	7	S. D. Willard, “	18	17 90
	8	W. N. Scarff, “	19	14 85
	11	A. D. Selby, “	20	12 62
	14	C. F. Yeslin, “	21	16 50
	15	Wm. Miller, “	22	20 45
	31	Frank Q. Brown, “	23	79 75
1897.				
Jan.	11	The Fleming Printing Co., “	25	15 70
	14	W. W. Farnsworth, “	26	19 00
Feb.	3	F. M. Webster, “	27	23 58
	18	A. D. Selby, “	28	6 83
	18	E. M. Woodard, “	29	9 32
	26	N. Ohmer, “	30	6 00
Mar.	9	W. W. Farnsworth, “	31	50 90
	11	H. H. Altfather, “	32	18 45
	12	W. W. Farnsworth, “	33	96 65
	12	T. H. Kelsey, “	34	9 00
	12	Spar & Glenn, “	35	2 75
	13	W. N. Scarff, “	36	19 50
	13	E. H. Cushman, “	37	27 30
	13	F. M. Webster, “	38	16 60
	31	W. J. Green, “	39	31 30
April	5	Clapper Printing Co., “	40	175 00
	14	“ “	40	44 00
May	7	W. N. Scarff, “	41	5 00
	10	W. B. Alwood, “	42	10 00
	12	E. M. Woodard, “	43	11 00
	12	E. H. Cushman, “	44	10 10
	13	N. Ohmer, “	45	5 00
	13	W. W. Farnsworth, “	46	39 30
June	11	“ ¼ salary “	47	75 00
Sept.	18	“ sundries and salary......................	48	102 35
	24	Wm. R. Lazenby, “	49	47 20
Oct.	16	W. W. Farnsworth, “	50	11 80
		Total		$1,417 40

N. OHMER, Treasurer.

1896.	In Account with Ohio State Horticultural Society.	Cr.
Dec. 5	Balance in treasury	$638 19
9	Warrant on state treasury	129 55
9	Received from treasury, membership fees	148 00
1897.		
Mar. 23	Warrant on state treasury	473 65
April 9	Warrant on state treasury	453 45
June 23	Warrant on state treasury	70 00
1897.		$1,912 84
Dec. 1	Paid out to date	1,417 40
1	Balance in treasury	$495 44

We, the committee appointed, find this report correct and all the vouchers on file.

M. Crawford.
J. J. Harrison.
C. L. Whitney.

Mr. Ohmer: Mr. President, I wish you would appoint a committee of three to examine these accounts.

The President: I will appoint Messrs. Crawford, Harrison and Whitney.

The President: The next thing in order is the election of officers for 1898.

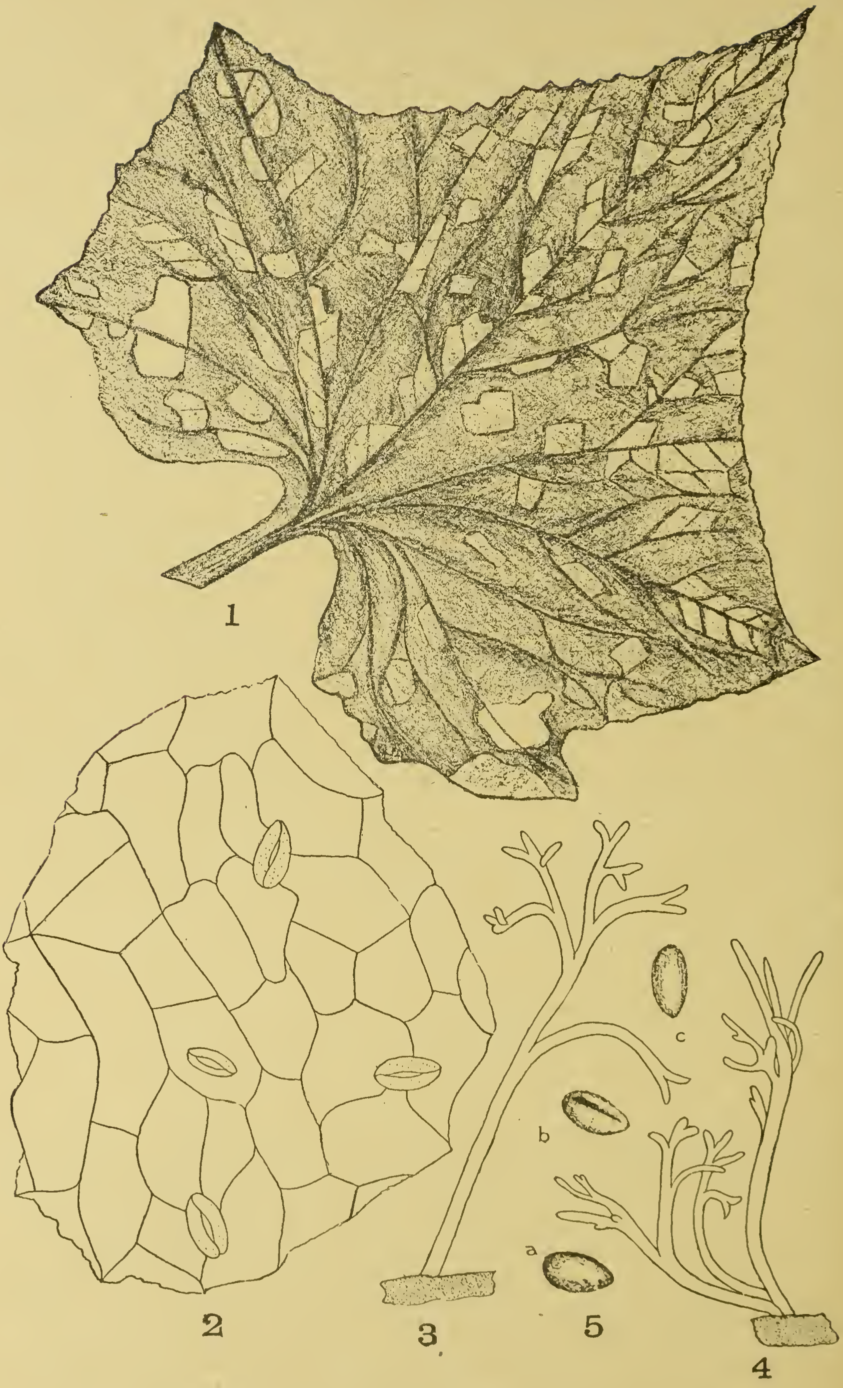
Mr. Shirer: I think it is unfair to hold the election while these men are out. I move that we listen to Professor Selby's address until these gentlemen get back. (Motion carried.)

DISEASES OF CUCUMBERS, MELONS AND TOMATOES AND THEIR PREVENTION.

By A. D. SELBY.

Wayne county is the leading cucumber growing or, perhaps I should say, the leading pickle growing county in Ohio. About 950 acres were contracted to be grown the present season and a new factory will make the probable acreage for 1898, 1,100 acres or more, even without the 100 per cent. increase, talked of for Smithville. But in view of the fact that yields for the current year were only about one-third to one-half what they should have been, I think you will pardon me, Mr. President, for taking this subject of local interest and trying to find out what is the matter with the pickle vines?

The cucumber beetle is always about, and for what I know the melon louse, but their injuries were not the chief complaint this year. Yet, I should mention here a serious bacterial wilt disease of cucumber and muskmelon plants, which causes them to die suddenly as they are of a size to begin to vine. This disease has been studied and traced to a bacterium, *Bacillus tracheiphilus* Smith. The plants appear



Cucumber Downy Mildew. Fig. 1, diseased cucumber leaf, natural size. The light areas represent the yellow spotting. Fig. 2, epidermis from upper leaf surface of cucumber, showing stomates. Figs. 3 and 4, spore bearing branches of the fungus. *Plasmopara Cubensis*, from dried specimen. Fig. 5, a, b, c, spores (conidia) of the fungus: b shows grooved or collapsed condition. Figs. 2, 3, 4 and 5 magnified about 500 diameters. (From drawing by Mrs. Selby.)

healthy, but suddenly wilt down as if for lack of water. The interior of the stems dying thus, are often found, by use of the microscope to be swarming with microbes. All that can be done from our present knowledge is to gather and burn the diseased vines and to practice rotation. The cucumber beetles and squash bugs go about inoculating the disease, and must, therefore, be suppressed as much as possible But passing these without serious loss of vines, and given favorable weather, the pickle harvest may yet be very short. Such was the case the past season After picking had begun, the leaves suddenly began to turn spotted and yellow; soon the leaves all withered away, except a few new ones at the end of the vines, and the crop was ruined. The yellow, angular spotting of the cucumber leaves is represented in the figure. This is the downy mildew, and it was the chief cause of loss in this region during the past season. The downy mildew is a fungous disease, the fungus in question being *Plasmopara Cubensis* (B. & C.) Humph., a parasite of the same group as the grape downy mildew, Peronospora, the potato rot, Phytophthora and the white mould of crucifers, Cystopus.

HISTORY AND DISSEMINATION OF DOWNY MILDEW.

This downy mildew fungus may be expected to attack all the cultivated plants belonging to the family of the cucumber, the Cucurbitaceæ. The fungus of this disease was first described in 1868 by Berkley & Curtis, of England, upon a wild plant of this family from Cuba. In 1888 it was found upon cucumbers in Japan, and in 1889 upon hot-bed cucumbers at New Brunswick, New Jersey. It reappeared at the latter place in 1891, not having been noticed in 1890, however, and has been prevalent ever since. It soon made its appearance in the pickle districts of southwestern New York, where, in 1896, its ravages reduced the crop to about 30 per cent. of the normal; the crop of 1897 is lighter than that of 1896. It was found in my garden at Wooster in 1895 and in forcing houses near Cincinnati the same year. It is also, apparently, over most of Ohio and in Illinois though not reported in other western states. In one case I found this fungus on muskmelon leaves, the commoner trouble on them being the *Alternaria* to be mentioned later. The disease of the cucumber is spread by spores, which alight, like dust, upon the upper leaf-surface, germinate there and penetrate the leaves through the stomates. In a very short time after the fungus enters a new leaf, it produces from the under side of this leaf, a crop of spores as represented in the figure. Except in the case of dashing rains or upturned leaves, the spores do not find their way, commonly, to the under leaf surface. The prevention of the disease will then be attained by keeping the upper surface of the leaves covered with a fungicide that either destroys the spores or prevents their growth.

The disease will be expected to appear wherever its seeds (spores) have been produced in abundance. We do not know the form of the winter spore but we do know that the same parasite comes upon the cucumbers year after year. This has been the case in New Jersey and in New York and will doubtless be the case here with us.

LOSSES CAUSED BY DOWNY MILDEW.

The losses caused by downy mildew admit of approximate computation for this county. From data collected the pickle crop of this year has been about 70 bushels per acre, all sizes. A fair average crop is three times this amount or about 210 bushels per acre. A loss of 140 bushels per acre upon 925 acres, rated at 40 cents per bushel for small ones and 1-5 larger pickles at 12½ cents per bushel, amounts to $45,000 crop loss for Wayne county in 1897. When we consider that the outlook is even less encouraging than these figures, the matter is fairly stated.

PREVENTION OF DOWNY MILDEW.

The method of prevention has been indicated, namely, by the use of fungicides. Rotation will be a good thing to reduce the evil, but alone can scarcely more than delay it. Some shielded fields this season were very late to suffer. Seed may spread the disease but of that there seem to be doubts.

In case the seed may do so, the methods of seed treatment tried last spring on tomatoes, can be tried here. But with the downy mildew prevailing in some fields, all are more or less exposed and must be treated to ward off the disease. The favorable results of spraying obtained in New Jersey were stated in Bulletin 73. Since that time a successful experiment was tried by the New York Experiment Station, at Woodbury, Long Island. Unsprayed and sprayed plots were alongside each other. The unsprayed showed downy mildew on August 7th and were all beyond picking August 21st; while after August 21st, the sprayed yielded at the rate of $173 worth per acre. This was at about four times the pickle-house prices for the crop. The cost of spraying, seven times with knapsack, and for materials, amounted to $9.50 per acre, leaving a net gain of $163.50 per acre. Divided by four, this gives a profit of $33.75 per acre, which is enough to expect.

In co-operation with Mr. D. E. McIlvaine, of Creston, we tried this year a small experiment beginning August 26th. Obviously this was too late to expect any decided results. Yet Mr. McIlvaine reports from that spraying, given three times, (Aug. 26, 29-30, Sept. 3-4) a beneficial result amounting to 12.6 more bushels and an improvement in quality. We found that about 100 gallons per acre was required for each of these later applications.

About six to eight sprayings are thought to be needed; computing at seven treatments we get about 11 barrels of Bordeaux mixture (Bordeaux 1 of Calendar) per acre for the season. With cart, sprayer, horse and three men, 10 to 12 barrels will be applied per day. The necessary cost per acre of this spraying will then be

11 barrels, 550 gallons Bordeaux mixture at ½c per gallon	$2 75
11 hours labor, 3 men and horse @ 45 cents per hour	4.95
Total	$7.70

This is upon the basis of 5 cents per pound for copper sulphate.

At 8 cents per pound for the sulphate, the cost is:

Materials	$3.375
Labor	4.96
Total	$8.325

SUGGESTIONS ABOUT THE SPRAYING.

Knapsack sprayers may be used but with increased expense for labor. The chief points are a good pump with agitator, and good nozzles, that is, nozzles that make a fine spray. If cart sprayer is used, the planting of cucumbers will need to be adapted to the work of spraying. It is suggested that the rows, now commonly 6 feet apart may be put at 5 ft. 6, and six or eight rows so planted. Then a roadway of 8 or 10 feet may be left for cart sprayer. This will prove very convenient in gathering the pickles. The closer planting of the rows is not essential and the roadway may be left without any other changes, the grower contenting himself with fewer hills per acre. Stewart, of New York, has suggested to plant 2 rows of cabbage or cauliflower 3½ feet apart, in the middle of these roadways. The horse can then walk between the rows while the cart wheels run outside them. The same would hold true if a barrel sprayer were used upon an ordinary wagon. Carrots, parsnips, and in fact any low growing crop, such as late potatoes, might be used in the rows mentioned. The applications of Bordeaux mixture should begin when the plants are ready to vine and be repeated at intervals of 2 to 3 weeks until about September 10. The object should be to keep all leaves covered with the mixture; in applying it, spray till foliage drips.

In rainy weather more frequent spraying will be needed, though it does not follow that to spray before a rain is labor lost. To be effective, the spraying must be done on time and the preparations should all be made in advance. Various methods of saving time, as by use of large tanks, stock solutions and slaked lime kept under water will be found in Bulletin 79, and in the spray calendar. It seems to me that the spraying offers a practical remedy for cucumber downy mildew.

CUCUMBER AND MELON ANTHRACNOSE.

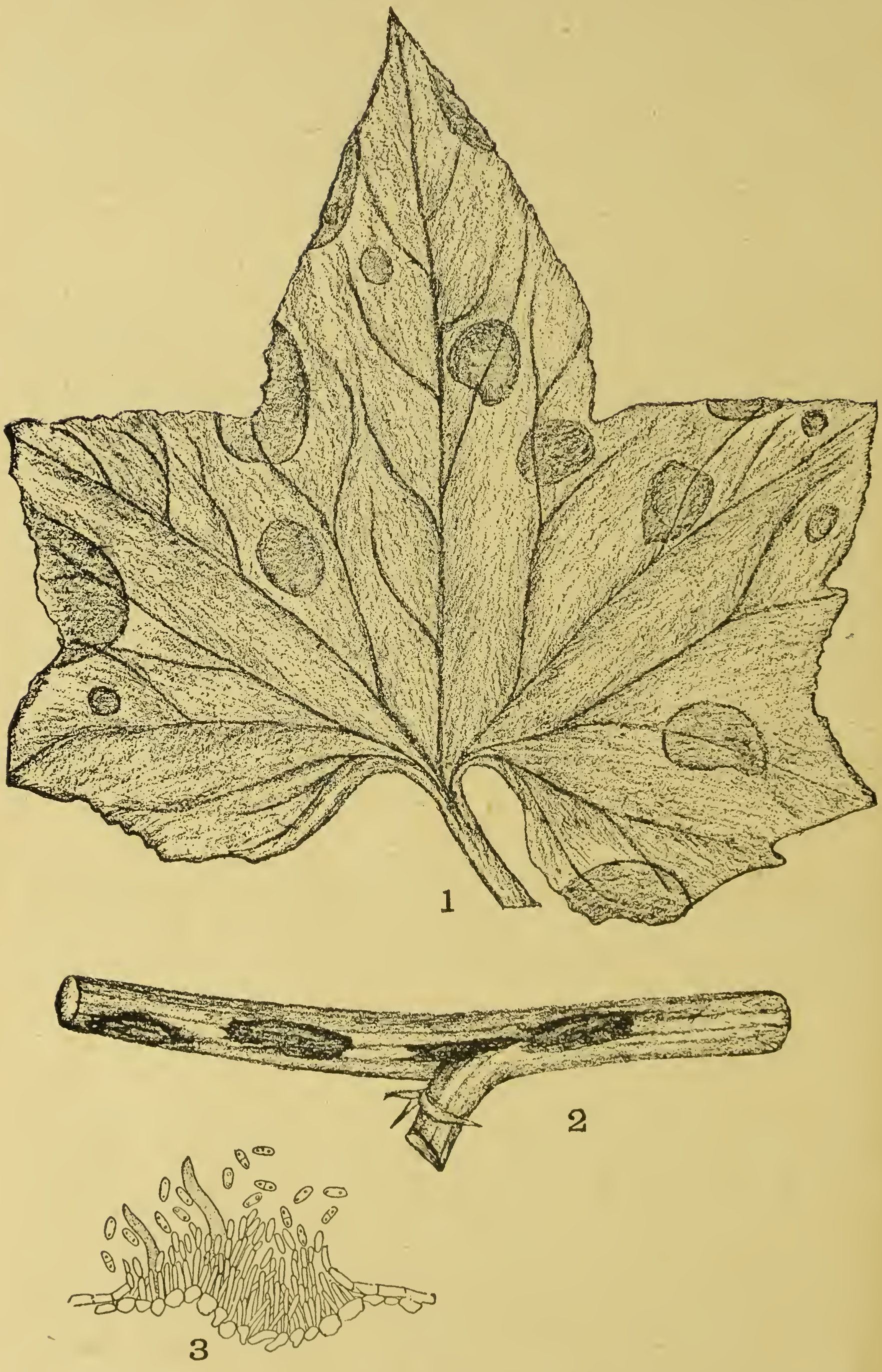
There is another disease of plants of this class, namely the anthracnose, which has made its appearance in this region. I found it last summer near Silver Lake not far from Cuyahoga Falls, upon cucumbers and squashes; also upon my own muskmelons at Wooster. This is a fungus trouble like the preceding, caused by the anthracnose fungus, *Colletotrichum lagenarium* (Pass.) It attacks stems, leaves and fruit upon all these plants and upon watermelons also; it likewise spots bean pods. The cut shows the appearance of affected leaf and stem of cucumber plant and drawing of the fungus. Upon muskmelons the effects are very similar, while upon watermelons it makes small dark, sunken spots in the rind, causing the fruit to be bitter, aside from any destructive attacks upon the other parts of the plant.

I fear that this disease will be found in many melon and pickle fields next year, although several years may elapse before it becomes general. It is now general in the New Jersey and New York pickle fields. It is spread like downy mildew, by its spores. There is, in this case, however, much greater cause to fear the spread of disease upon the seed.

The spraying for anthracnose as outlined in the spray calendar is just that recommended for downy mildew. The same applications will serve for both. The anthracnose promises to be the more difficult of the two to control successfully by spraying.

MELON LEAF BLIGHTS.

The complaint of disease on muskmelon and watermelon vines has been universal the past season in Ohio. The muskmelons upon the market were chiefly wilted, or insipid by reason of the diseased vines. Growers estimate that the loss amounts to 50 per cent. of the market crop. I do not understand that this estimate takes into account the impaired quality (and value) of the melons marketed, but simply the loss of yield. Taking into account the injuries of melons due to cucumber beetles and to the insidious bacterial wilt of muskmelons or similar wilt of watermelons, we still have left the larger loss to be attributed to the melon leaf blight, a disease figured and described in Bulletin 73, occurring upon muskmelons. This fungous trouble has now attacked watermelon leaves. In the muskmelon it causes brown, dead spots, while in watermelon leaves these spots are rather smaller and are almost black. Similar appearances may also come from the attacks of the downy mildew and anthracnose. In one case, the former was present to a slight extent, while in another at Marietta, the anthracnose was accessory to the ravages of the leaf blight fungus. The microscope may be relied upon to distinguish readily these parasites but not to apportion their relative injuries. It is the *Alternaria* fungus mentioned in Bulletin 73, that seems chiefly responsible for the melon troubles the past season. This disease is spread by its pores and can scarcely be disseminated by seed.



Cucumber Anthracnose. Fig. 1, cucumber leaf attacked by anthracnose, three-fourths natural size. Fig. 2, portion of diseased stem: natural size. Fig. 3, section of an acervulus of the anthracnose fungus. *Colletotrichum lagenarium*, showing setæ, spores and spore-bearing branches, magnified about 500 diameters. (From drawing by Mrs. Selby.)

PREVENTION OF MELON LEAF BLIGHT.

Judging by the past season's experience, there seems little to hope from nutmeg melon growing unless a remedy be found for this leaf-blight fungus. Unfortunately we have less satisfactory evidence as to the value of spraying for its prevention, than we have with downy mildew of cucumbers. Professor Green has tried it somewhat but not thoroughly. I shall, however, for the present, recommend the same treatments both as to time and number, as were given for cucumber mildew. When thoroughly tested these seem likely to prove effective. I shall hope to see thorough trial made next season.

TOMATO DISEASES—LEAF BLIGHT.

The past season's tomato crop was quite generally short. The season was doubtless a large factor in this unfavorable result. Locally the diseases have been very active. On the tomato grown in the field we have three serious diseases, namely, (1) Leaf Blight, (2) Bacterial Blight, (3) Anthracnose. The first has been examined from Cincinnati, Marietta, Ashtabula and many intervening points. It was experimented with here at Wooster and observed at Creston. This fungous disease is due to a leaf-spot fungus, *Septoria Lycopersici* Speg. shown in the chart. It closely resembles the shot-hole fungus of the plum in its mode of attack but unlike it, does not cause perforations in the leaves. It affects both leaves and stems. It is likely to prove a general enemy of tomato growing and though less destructive than the diseases previously described in this paper, it may require treatment.

The bacterial blight mentioned, is a disease affecting in common, the tomato, egg-plant and Irish potato. The tops die off suddenly and with almost complete destruction of crop. This happened near Mt. Carmel, Clermont county, in 1896, The Anthracnose attacks the fruit causing it to spot and become unmarketable. This trouble has been seen in a few places only; it may perhaps be transmitted by the seed.

As shown by the photograph, three or four sprayings with Bordeaux mixture will probably check the leaf blight fungus of the tomato successfully. The results here are very striking, with but three sprayings, August 6, 17 and September 2–3. The spraying would be easier upon staked tomatoes than upon those spreading at will. The same questions about roadway, as in the case of cucumbers, may arise here and may be met in the same manner. For bacterial blight spraying does not promise relief. Fire and rotation may be recommended. The anthracnose is amenable to spraying as has been shown by Dr. Halstead in New Jersey. The prospects for profitable spraying of tomatoes is rather less than for the spraying of cucumbers and muskmelons. Trials in this line seem, however, well worth making

Acknowledgment is made to the Ohio Agricultural Experiment Station for the cuts used in this paper.

Mr. Albaugh: I do not know any more opportune time than just now to offer a few suggestions on this very able lecture of Professor Selby's, and the first thing that strikes me and that will strike all the pickle people in this audience—and it seems to me that the people of Wayne county are somewhat interested in the pickle business just now—is that with all the direful diseases that these cucumber and tomato and melon vines have, we are about in the same condition as the Indian doctor on the Wabash River a great many years ago. When he found a patient had the "ague," he gave him a dose of quinine; if he had malaria he gave him a dose of quinine, and it was said if a man were to fall and break his neck the first thing the doctor would give him would be a dose of quinine. So it is a great deal of satisfaction to us to know that the same thing will succeed in destroying different diseases, and we do not need to know the downy mildew or the anthracnose or the leaf blight or any of these diseases, if we apply the same medicine it accomplishes the same result.

There is one thing we have learned from this and that is, as you have done in this county and nearly all the different counties in the state, we are becoming more and more every year concentrated upon some one particular interest, just as you seem to have done here, and instead of scattering all over the whole range of agricultural products and grapes and peaches and pears and apples—not entirely, but it tends in that direction—like your cucumber interests in this county, and see of what immense value to your farmers; and in other counties we have likewise special interest, we then see how important it is, that this same farming community should be protected and guided and directed how to grow the safest and cheapest and most profitable of these several crops that are growing in the different parts of the state.

And that leads me to another point, and that is, that in this great state of Ohio we devote less money, the legislature gives us less money for the great agricultural interests of the whole state, than they do in nearly everything else. I remember that eight or nine years ago, when I had "broken into" the legislature of Ohio, that we endeavored hard to get as much as one thousand dollars for the State Horticultural Society, for fighting these diseases and insects that infest fruits and all kinds of agricultural plants that are grown, so that we would know how to combat them best, and when we tried to get one thousand dollars of an appropriation from the state, we had to argue very hard, and on the same day the finance committee granted another department of our state, the militia of our state, with their shoulder-straps, and the captains and the lieutenants and the colonels $125,000, and I do hope that somebody will be able to administer pricks of conscience to our legislators this winter at Columbus, and when the agricultural people ask through their proper representatives for an appropriation, that they will be able to see that we want a little more for business, and not quite so much for show.

Mr Carr: I would like to ask Professor Selby if this anthracnose on the tomato can be kept in check in the green-house by spraying.

Professor Selby: I do not know of any experiments. I would expect to have less success under glass than out of doors because wherever we apply the mixture, especially under glass we are so apt to get light combinations. I think it would be more dangerous. I would certainly try it if I was troubled with the difficulty under those conditions

Mr. Shirer: Suppose that there were some anthracnose around on the dead vines or leaves of the raspberries, what time next year will the first spores spread?

Professor Selby: You mean raspberry vines?

Mr. Shirer: Raspberry or pickle vines lying around.

Professor Selby: We don't know anything about the winter conditions of the cucumber spores, but in the case of the raspberry we expect to find the first spores about the first to the tenth of May.

Mr. Shirer: Same with the grapes?

Professor Selby: I think so; it may vary some with the season's conditions.

Mr. Pierce: Depends on the heat of the weather, don't it?

Professor Selby: It is influenced by the conditions of the weather.

Mr. Livingston: I am sure the value of the tomato will far exceed that of either the pickle or the melon. While pickles and melons are very good in their places, during the last twenty years there has been a wonderful advance in the tomato vine. Several years ago we had small patches of this same thing, to all outward appearance. The under leaves would drop off and then it would cease to spread out. We called it blight but I did not know what it was. The last two years we have laid it to wet weather, so many tomatoes as big as hulled walnuts would drop off. But this year some portions of our land, right this side of the University, showed no fruit at all, the bottom land scarcely anything at all until towards the latter part of the season. Last year it was a little worse. We took a great deal of pride in that bottom land and I would take strangers up there to see our tomato fields, and I said: "We will go down and examine them. There must be a very large crop of fruit set," and to my utter astonishment, there was nothing there. On our clay land there was a good crop last year. Some varieties were worse than others. But I tell you this tomato business is no small business. When I first went to Columbus twenty years ago, one hundred pounds of tomato seed was all I would need for my customers. Now it takes from eight to ten tons.

Mr. Shirer: I have begun to feel better. You know I made an expression this forenoon and you began to laugh at me and thought that I was away off the track, and now comes friend Livingston with his tomato seed story, and if that is all planted and only one or two tomatoes on the stock, that is more than the apple crop of Ohio already.

Mr. Crawford: The committee appointed to audit the Treasurer's report have carefully examined and find the same correct and find all the vouchers on file.

Motion to adopt the treasurer's report unanimously carried.

The President: This has been a very interesting subject and one that touches our pocket-books, and consequently, is very interesting; however, there are a large number of local attendants and especially ladies here, this afternoon, and it is thought best by the business committee to introduce at this time, a subject that is interesting to all of us, and that is roses. We have invited Mr. T. T. Finney to talk to us upon the subject of some valuable hardy roses.

ADDRESS BY MR. T. T. FINNEY.

I wish to say at the beginning, that I do not consider myself an expert or an authority on roses, and what I have to say is the result of my own experience, and must be taken for what it is worth.

In common with other branches of Horticulture, great progress has been made in the culture of the rose during the last twenty years.

The subject, as stated by the President, is a few valuable Hardy Roses.

It is difficult to say just what are considered the hardy roses of to-day.

Twenty years ago, the Provence, Damask and Moss Roses were considered the hardy roses, and any varieties that required protection during the winter, were called tender or half hardy. When we speak of hardy roses now, we have reference to an entirely different class, and what constitutes a so-called hardy rose, is an entirely different matter.

The hardy rose of the present, is any one that will survive the winter in the open ground, with a reasonable amount of protection.

The old hardy roses of our grand-mother's gardens have almost dropped out of cultivation, and their place has been taken by a better class. The demand has been, and still is, for a class of roses that will produce the greatest amount of bloom during the summer season.

Ever since the year 1842, which ushered in Desprez, Baronne Prevost, now the oldest of the hybrid perpetuals, this class has steadily grown in popular favor, and all things considered, are by far the most valuable and useful roses we have.

They are not however, true perpetuals as the name implies, and when such are wanted, we must look to the Bourbons, Hybrid Teas, and some of the Teas that will survive when properly protected; but in the Hybrid Perpetuals we have a wider range of color, larger size and greater beauty of form than is found elsewhere. This class is particularly rich in dark crimson shades. It is not difficult to grow good roses if three essentials are complied with.

(1) A good sunny location away from the roots and shade of trees. (2) Good rich soil with plenty of manure added, and (3) in dry weather an abundance of water.

The advice is frequently given to dig out beds eighteen or twenty inches deep and fill with a mixture composed of two-thirds good soil and one-third manure. There may be instances where the soil is so unsuitable or poverty stricken that this will be necessary, but ordinarily the soil spaded to the depth of twelve or fifteen inches will be sufficient. To excavate beds twenty inches deep, requires great outlay of time and labor, and would be impracticable except in very small areas.

In preparing, we dig in three or four inches of rotten manure. A second spading will be necessary to thoroughly incorporate the manure; and if convenient, the beds should be prepared two or three months before planting. The best time for planting roses in this latitude, is probably the Autumn. Root action with the rose, begins so early in the Spring, that it is difficult to get planting done before it commences, and often it is not possible to get beds prepared before root action begins. This may not hold good in the case of roses kept in cold storage, as Mr. Harrison keeps his. In regard to plants, we prefer budded plants, but there is a great difference of opinion as to which are better, budded plants or those on their own roots. In our own experience budded roses have given so much better results than those on their own roots, that we grow them all that way now, whether Tea Hybrid Perpetual or Bourbon.

Both ways have been given a careful trial and the result is in favor of the budded plants. With many varieties, we never grew a single good rose until they were grown on the Manetti stock. The Manetti rose is very vigorous, growing deep rooting species, and is generally the one used for budding on, and we find that many varieties of roses grown on this stock bloom more profusely, endure the heat of summer better, and make far stronger plants than if grown on their own roots. Many varieties of moderate growth, like Marie Bauman, Louis Van Houtte and Eliza Boelle become much more vigorous in growth and succeed better in every way when budded.

Still others like Baroness of Rothschild, Merveille de Lyon and Mable Morrison absolutely refuse to grow from cuttings, and if grown at all, must be grown as budded plants.

The only objection that can be urged against budded plants, is that the stocks sometimes send up sprouts from below the budded part. This will seldom happen if they are properly planted. Budded roses should be planted sufficiently deep, so the crown of the plant will be at least three inches below the surface of the soil. All roses, for that matter, should have the crown three inches below the surface of the soil. If so planted there will be no danger of losing them by winter killing, even if the tops are killed to the ground, for new shoots will come from the crown.

After planting, the beds should be thoroughly cultivated or mulched during the summer. Our own planting of last spring was done in this manner. Some eight or nine hundred plants were planted in one block, in rows three and one-half feet apart, and we cultivate them with a horse. Growing as many as we do, it is not practicable to grow them in beds, so we have reduced it to field culture. There are few plants that respond more readily to good cultivation than the rose, and it should be kept in mind that next year's crop of roses will depend on the vigorous, thrifty growth that should be made the present season.

Protection during the winter may be given in various ways. The plants may be tied up with straw, and when but few are to be protected, this is a very satisfactory way. Most of the Hybrid Perpetual require nothing more than a heavy mulch of coarse manure or straw about their roots, or they may be banked up with earth eight or ten inches in height.

The more tender sorts may be laid down and entirely covered with leaves or soil.

The plants should not be uncovered in the spring until all danger of freezing is over. When uncovered, all dead and injured wood should be cut out. Nearly all roses do better if moderately pruned. Some sorts do better if one-half or more of the past year's growth is removed.

As a general rule, the more vigorous the growth, the less it should be pruned.

The plants should have a liberal application of well rotted manure worked into the soil annually.

In regard to varieties, it is a difficult matter to make a selection from the great number that we have, especially when people's opinions as to form and color differ so widely. I might name a few varieties that have given us very satisfactory results. Of course, there are many others that I should dislike to throw away or discard, but they are perhaps not so generally useful as those I will mention. Among the deep dark crimson varieties I would select Baron de Bonstettin, Earl of Dufferin, Jean Liaband, Louis Van Houtte, Pierre Notting and Prince de Rohan.

All things considered, I regard the Louis Van Houtte the best crimson rose I have grown. It is not quite so hardy as some of the rest. Among the bright crimson varieties I should select Charles Lefeber, Fisher Holmes, General Jacqueminot and Lady Helen Stewart. General Jacqueminot is probably the most popular of the crimson roses grown now. Those of other various shades of red or crimson are Alfred Colomb, Marshall P. Wilder, Gloire de Margottin, Maurice Bernardin, Marie Rady and Uhlrick Brunner. Uhlrick Brunner seems the freest of all diseases and insects of the roses that I have grown, but it is not, however, a good bloomer except in June.

Of the shades of pink and rose Anna de Diesbach, Baronne Prevost, John Hopper, Francois, Paul Neyron, Baroness Rothschild, Mrs. John Laing, and Madam Gabriel Luizet.

The President: What is the matter with Magna Charta?

Mr. Finney: There is nothing wrong with the Magna Charta, but I couldn't give them all in the list. Among the white varieties are: Mabel Morrison, Merville de Lyon, Coquette des Alps and Margaret Dickson.

Now, here is a list of free blooming roses far later in the season: Alfred Colomb, Anna de Diesbach, Baronne Prevost, General Washington, John Hopper, La Pierre, Louis Van Houtte, Mabel Morrison, Marie Bauman, Marshall P. Wilder, Mrs. John Laing, Paul Neyron and Coquette des Alps.

For those that wish to plant small beds and have the greatest amount of bloom during the summer, I would say plant Souvenir de Malmaison, and for crimson, Agrippina Hermosa and Clotilde Soupert. These cannot fail, if circumstances are at all suitable, to give you plenty of roses during the entire season. There are many others that may be planted and give good results.

Mr. Shirer: You spoke of the soil. Does it make any difference whether it is sandy or loam?

Mr. Finney: We prefer, where we can have it, a good clay loam. I should not expect to grow very fine roses in sandy soil.

Mr. Albaugh: We often see statements made at meetings of different kinds, at weddings, parties, etc., of ladies wearing American Beauty roses. Of course we understand that is not a hybrid perpetual, but it is possible to grow the magnificent roses, American Beauty and Marshall Neil, if grown in the open and protected from the cold in winter. So I would not wish to discard these two popular and well known and very valuable roses.

Mr. Shirer: If I were to plant but one rose, I would plant the Crimson Rambler. We planted one last spring a year ago and it grew ten feet the first season. It is a little thing, and by the way, the man that sold it to me said my soil contained too much sand, but it grew ten feet the first year, and the whole vine was covered with beautiful roses.

Mr. Albaugh: The Crimson Rambler you will understand is a climber, full of magnificent flowers that would be the envy of the trimmings of the finest ladies' bonnets in Ohio as compared to any of the artificial colors. They would attract any body. (Laughter.) From one stock there may be probably three or four or five hundred, or a thousand.

Mr. Shirer: Yes, more than that, more than that.

Mr. Albaugh: Yes, more than that. (Greater Laughter.)

The President: I would like to say for the benefit of all concerned that the next business this afternoon will be the election of officers and reports of committees, and if there are those here who do not care to remain, they will be at liberty to leave at this time.

The following persons were chosen as officers of the society for the ensuing year:

President—Mr. E. H. Cushman.
Vice President—W. N. Scarff.
Secretary—W. W. Farnsworth.
Treasurer—N. Ohmer.

AD INTERIM COMMITTEEMEN.

First district, C. H. Waid, Emery, Fulton county.
Second district, N. H. Albaugh, Tadmor, Miami county.
Third district, A. Shirer, Dayton, Montgomery county.
Fourth district, Wm. Miller, Gypsum, Ottowa county.
Fifth district, O. W. Aldrich, Columbus, Franklin county.
Sixth district, E. G. Cox, Ensee, Lawrence county.
Seventh district, E. M. Woodward, Kirtland, Lake county.
Eighth district, H. H. Aultfather, Minerva, Stark county.
Ninth district, J. D. Imlay, Zanesville, Muskingum county.
Tenth district, C. L. Whitney, Warren, Trumbull county.

Mr. Shirer: I have a resolution to offer now, as follows:

Resolved, first, That we invite all local horticultural societies to become members of the state society.

Second, That each local society shall annually pay to the state society a sum equal to twenty cents per male member.

Third, That the secretary of the state society shall send to each local society as many copies of our Annual Reports as each shall have members.

After thorough discussion the resolution was referred to the Committee on President's Address.

Professor Green: I would like to offer a resolution. The Missouri State Horticultural society have taken up the matter of introducing horticulture into public schools, and they want us to co-operate with them. Now, I move that there be a committee of three appointed to co-operate with the Missouri society in this matter. Of course what papers and explanation we have from that society can be put into the hands of this committee.

Mr. Harrison: Why not include New York State? The farmers have made a much greater effort in that direction than Missouri has.

Professor Green: Simply because Missouri has invited us to co-operate and they have asked other states to co-operate. Missouri is taking the lead. New York has not asked us to take hold with them.

Mr. Shirer: Does the question mean, if we adopt it, that we are in favor of having horticulture taught in the public schools?

The President: I think it does.

Mr. Shirer: I for one am most emphatically opposed to that measure.

Professor Green: If it means that, let me amend my motion, to appoint a committee to look into this matter and report to this society to-morrow. I move that a committee of three be appointed to examine into the matter of co-operation with the Missouri committee in the introduction of horticulture into the public schools.

And thereupon the motion was passed unanimously.

The President: I will appoint on this committee Professor Selby, Mr. Shirer and Mr. Carruthers.

And thereupon a recess was taken until 7 o'clock P. M., of the same day.

EVENING SESSION.

Order was called by the President at seven o'clock pursuant to adjournment.

The President: We will first listen to the report of the awarding committee which will be read by Secretary Farnsworth.

REPORT OF AWARDING COMMITTEE.

Rome Beauty—1st, S. R. Moore; 2d, W. W. Farnsworth.

Baldwin—1st, P. M. Klink; 2d, H. H. Aultfather.

Belmont—1st, F. E. Carr; 2d, W. W. Farnsworth.

Ben Davis—1st, W. W. Farnsworth; 2d, Daniel Duer.

Grimes' Golden—1st, Wm. Miller; 2d, W W. Farnsworth.

Jonathan—1st, S. R. Moore; 2d, W. W. Farnsworth.

Northern Spy—1st, M. E. Sweet; 2d, R. Moore.

Peck's Pleasant—1st, T. T. Finney; 2d, F. E. Carr.

Rambo—1st, M.E. Sweet; 2d, W. W. Farnsworth.

Rawles' Janet—1st, E. G. Cox, 2d, W. W. Farnsworth.

Red Canada—1st, M. E. Sweet; 2d, W. W. Farnsworth.

R. I. Greening—1st, F. E. Carr; 2d, M. E. Sweet.

Roxbury Russet—1st, Daniel Duer; 2d, H. H. Aultfather.

Stark—1st, W. W. Farnsworth; 2d, E. G. Cox.

York Imperial—1st, H. H. Aultfather; 2d, T. T. Finney.

Best plate of Apples, any variety adapted to Southern Ohio—1st, S. R. Moore; 2d, Daniel Duer.

Best plate of Apples, any variety adapted to Northern Ohio—1st, Daniel Duer; 2d, H. H. Aultfather.

Best plate of dessert Apples—1st, Wm. Miller; 2d, S. R. Moore.

Best plate of market Pears—1st, E. M. Woodard; 2d, Daniel Duer.

Best plate of dessert Pears—1st, W. W. Farnsworth; 2d, E. W. Counter.

Best display of Grapes—E. M. Woodard.

Best display of Celery—M. W. Spear.

Best collection of Potatoes—F. E Carr.

Best un-named seedling Potato Mrs. Hattie Lands.

Best display of Carnations—1st, C. C. W. Counter.

Collection of Apples—1st, Daniel Duer; 2d, W. W. Farnsworth.

Display of Vegetables—1st, E. M. Woodard; 2d, F. E. Carr.

D. R. Firestone exhibited specimens of Kaffire corn and E. A. Manges a specimen of buckwheat. The Experiment Station exhibited twenty-three varieties of potatoes and twenty varieties of apples. The Experiment Station showing the effects of spraying was highly commended by the committee.

F. E. Carr, of Lakewood, exhibited eleven varieties of gourds and E. A. Riehl, of Alton, Ill., showed a very fine plate of Nix late cling peaches.

R. O. Haymaker, of Earlville, Ohio, showed some canes of the Haymaker raspberry, a fine new purple variety.

Your committee also beg leave to report that there is on exhibition by the Withington & Cooley Mfg. Co., of Jackson, Mich., a fine line of spading forks, garden rakes, garden hoes, lawn rakes, lawn weeders and four sorts of scuffle hoes. By Wm. Miller, one Deming Spray Pump; by Wm. May, one quart berry baskets, two different styles of shipping crates, one picking stand, the make up of which ought to commend them to all small fruit growers. By the Mt. Gilead Pottery Co. an exhibit of very fine Flower Pots, Vases, Hanging Baskets, Saucers etc. By A. J. Munger, Antwerp, a wire basket. By the Sirocco Co., one Sirocco Dust Spreader.

In the opinion of your committee, the above exhibits merit the highest approval of the Society.

The President: If there is no objection to the reports of the committees, they will stand approved and be incorporated in the proceedings of the meeting. Are there any other committees ready to report? If not, we will now listen to a selection by the choir, "Chiming Bells."

The President: We will next listen to "Nature Studies," a paper, by Miss Anna E. Hurst.

NATURE STUDIES.

By Miss Hurst.

In all this Universe no one thing exists by itself; therefore nothing can be studied by itself. There is an inter-relation, a dependence, and a co-relation between all forms of animal and vegetable life, and these in turn react upon and greatly influence human life; so it follows that for the investigation of these relations we have specialists in all our scientific departments—men who have studied widely in many lines in order to become very proficient in some one particular line.

At one time the studies in our Colleges and higher schools of learning were three: Latin, Greek and Mathematics; then the world woke up to the importance of the Natural Sciences. To-day these studies receive, if not a higher, at least an equal place with the dead languages. Another important step within recent years was the introduction of the so-called Nature Study into the primary grades of our public schools.

However, while it occupies a place on the school catalogue along with arithmetic, reading, writing, etc., it is too often the case that in many schools where the attempt is made to teach this study, it is carried on in a desultory and unsystematic way, simply because the teachers themselves feel their own ignorance, incompetency and, shall I add, lack of interest. For whatever can be accomplished in other lines of study without it, in this particular line almost nothing will be gained without an intense interest and enthusiasm on the part of the teacher; and there cannot be interest and enthusiasm, without a fair knowledge of the principles which underlie the many sciences that come under the head of Nature Study. But, you may ask, "Why teach in primary grades scientific facts which the child will get later on in his school course?" Because in early childhood is the time for these beginnings. Pedagogy tells us to begin the child's education with those things in which he is naturally interested, and he is naturally interested in animals, plants, insects, in fact all objects which come within the range of his daily experience. In early life there is a desire to learn about these things which can be easily cultivated, whereas, it cannot be in later life. Dr. Halleck says, "Nature emphasizes the fact that she has one time for a thing."

The thoughtless person may delude himself with the idea that he can plant his Indian corn in the autumn. So he can, but Nature will not allow him to reap a harvest. Not even the wisest can answer all the questions of childhood, but it is a carelessness that only lack of intention saves from being criminal, that refuses to make the attempt to answer carefully such questions as a little thoughtfulness and investigation would make it possible to answer. The stereotyped reply which Prof. Webster quotes in the last Bulletin of the Station—the reply given to the child's curious "What is this ?" whenever he finds something in the insect world that attracts his attention; "Oh its only just a bug," is typical of the replies made by most persons to every inquiry of the child, concerning the world of nature.

The parent has not performed his whole duty, when he has seen his boy and girl supplied with the required text books and placed in school; nor has the teacher fulfilled all that is required of her when she has taught her pupils to read, write and spell correctly the lessons set forth in the aforesaid text books.

Pardon me, if I introduce a bit of personal experience to illustrate what I have in mind.

In McGuffey's Third Reader there is a lesson on "Indian Corn," its growth, uses and products. It had not occurred to me at the time, that the wise men and women who had revised this series of readers, had something more in mind when they selected that particular lesson, than the mere teaching the child to pronounce the words in it correctly. Consequently I wrestled with the word sirup—or rather I made the children wrestle with it—and only desisted in despair when one day I asked a little boy as a last resort, what he would ask for if he saw sirup on the table and wanted some, only to receive the instant reply: "I'd just say gimme some lasses."

Had I understood and appreciated that lesson myself, I should have had every girl and boy who was to read it bring some grains of corn to school; I should have had them plant them and watch them in process of germination; and I should have endeavored to have them find out for themselves all they could about corn and its products, and by the time they were ready to read that lesson, it would not only serve its purpose as such, but each new word in it would have back of it an idea understood and appreciated by the child simply because he had made it a part of his own experience. Teach the child to appeal from his books to the world of nature with which they deal, as far as possible.

Let him verify their statements concerning animal and plant life—but first see to it that these statements are correct. It is sad to relate that even those writers for children who in many respects deserve their reputation, are often careless in their generalizations and statements on these subjects. I have had the greatest difficulty, for instance, in making the children in my school believe that the tail of a tadpole is gradually absorbed, instead of falling off, because an interesting story which they could not hear often enough, represented a mother frog scolding her youngsters because they had lost their tails in the water. "Why," she is represented as saying "the bottom of the pond will be covered with tadpole tails!" I had read the story several times before it occurred to me that the children were getting an erroneous impression from this tale. And not until we had secured a jar of tadpoles and watched their development in the school-room, was the error corrected.

The value of such Bulletins as those recently issued by the Station on "The Birds of Wayne Co." and the more recent one on the "Life of a moth and Butterfly" cannot be overestimated. Something is needed as an offset to the current newspaper ornithology and entomology; something that may be secured with as little expenditure of time and trouble.

A child who has not been taught to open his eyes and ears to the beautiful sights and sounds of nature, has been deprived of part of his birthright. Get him interested in one department of nature study, and he will soon become interested in all. The study of birds for instance, leads directly to a study of trees as providing homes for them, of insects and plants as providing their food. He finds that the birds are the natural enemies of the insects that injure our trees; and he gets some idea of the economy of nature that he will never forget in after years, and an insight into her ways that will prove an immense benefit in all his after life.

Besides this he will find in such studies better training for his memory than in any system of mnemonics, no matter how widely advertised. The habit of accuracy formed in childhood is invaluable, and the study that takes note of the minutest variation in plumage, or the exact number of tiny stamens, in order to establish the identity of bird or flower is teaching the child carefulness, observation, exactness in description, and accuracy of definition. In order to gain the foundations for directing this study on the part of the child, books on the subject are absolutely indispensable to the teacher; and it is a cheering sign that within the last few years books easy of comprehension, while scientifically accurate, have multiplied and cheapened. The number of books on bird lore alone that have been published within the last three years, is probably equal to the entire number that were issued during the ten years preceding. Writers like John Burroughs, Frank Bolles, Bradford Torrey and others of their kind, have done much to popularize the study of nature and the love of nature, never dead, though too often dormant on our hearts, awakes to full life.

In our libraries we read some beautiful story; something that appeals to the best that is in us, that sets in motion the tenderest chords of our being, and through the story we see and love the author. Here before us is the great book of nature full of stories, plainest prose and subtlest poetry; full of pictures painted by the same Master hand that writes the poems and the tales. Teach a child first to see the beauty and glory of this great book, and it is only a step to its Author.

Teach him to feel his own dependence or his own relation to the world about him, and you have given him a glimpse of the Fatherhood of God.

The President: Professors Lazenby, Thorne and Webster have been appointed to open this discussion. As Professor Lazenby is not with us, I will call upon Director Thorne.

Director Thorne: Mr. President, I made no preparation to speak upon this subject, although it is one of very great interest to me, as to all of us engaged in this work. I am certainly very much pleased with the paper. It has presented the case in an admirable way and I can hardly add anything to it by whatever I may say. But it is certainly true that the facilities for obtaining knowledge in many things that are far away from our every-day lives, have been and are still very much greater than those for obtaining information which lies the closest to us. There is no difficulty in getting instruction in regard to the history, the mythology, the language and literature of those people who lived thousands of years ago; while in regard to these things which are around us, which we are teaching every day, which may mean life or death to us, it is the most difficult thing in the world, as yet, to get trustworthy instruction. I am heartily glad to see that times are changing, and changing rapidly in this respect. I believe the time is not far distant when there will be a complete revolution in our methods of education; when our teachers will, as this teacher has shown us so well to-night, strive to give that information which shall enable the children best to live, because best knowing those things in which their every-day lives are coming in contact with the world around them. God is in nature all around us, and as we learn nature, in such measure are we learning God, and as we omit the study of nature in just that measure we are omitting one of the most important principles of the Divinity. It is absolutely essential to our knowledge of God, saying nothing about our knowledge of every-day life, of the things which surround us. It is as absolutely necessary to our highest spiritual interest that we should know all about this world around us, why it is created and why and for what it has been made, as it is to study the traditions which have been handed down to us. I say that the time has come when the gospel cannot be preached as it should be preached, by a man who is ignorant of nature's laws.

There is no time when the human being may be interested to greater effect in the life around him than when he himself is a child learning to live, and I am glad to see that the spirit of giving this instruction is abroad in the land, and we trust that it will spread and continue to spread until we shall look upon this study of nature in a very different light than our fathers looked upon it. (Great applause.)

Professor Webster: Mr. President, I have been just a little amused with this whole matter of nature studies. A lady teacher, not from Wooster, but from another town came to me and said, "What are nature studies anyway? I asked our board of education what they were, and one of them said, 'O, talk about anything you have a mind to,' and the other said, 'Go to the Encyclopedia,' and I just don't know what nature studies are. I don't know what they want us to teach or want us to do, and I wish we could have some way of finding out what they really expect of us." The great trouble seemed to be, that nature studies is a sort of indefinite phrase that might mean much or little, just in proportion as one got acquainted with nature.

Now it seems to me that nature studies are simply studies of nature. It means what it says, studies of nature, and not studies of books. Books are very good things in their places, but they are a means and not an end, and some of them are not a very good means either.

I get a great many books for review, and some of the nature in these books is the most unnatural nature I ever ran across in my life, and I will give you a little example. You are not all entomologists, but I guess I can make it plain enough so you can understand. These books are put out for the use of schools, that is, I judge they are put out for the use of schools, and for the person who puts them out to make an honest living. Now, I have been working with insects twenty-five years and longer, and they certainly contain information that I never dreamed of in my life. The science goes beyond me. Now, here in one of these text-books for instance, is the description of *Lepidoptera*, or scale-wing. Here lepidoptera is said to consist of butterflies, moth and hawk-moths. Now, if I told you that the household pets of Wooster are cats and dogs and lap-dogs, you would have the same kind of information, and it would be going only a little bit further to say that a garden is made up of flowers and cauliflowers. (Laughter.)

Not half a dozen pages further on, I am told that the term *pupa* (or Latin for doll or baby) is applied to a certain stage of moths, while *chrysalis* is applied to the corresponding stage of butterflies; and yet upon the same page the astounding information is given that the caterpillar of the hawk-moth goes into the ground and forms a chrysalis. I cannot understand that kind of science. There has been a great deal going out as nature studies that is the most unnatural nature I ever heard of.

Then there is another thing that we have scarcely reached yet, and that is telling the truth by the general appearance of a book. Now, I have a book here just from the press, and it is a good one. I wish every teacher had it. On the front of the cover is a picture of a katydid. Most any boy or girl will recognize it. You would know at once that it is intended to represent a katydid. Now, that means something. It really would imply that there is some truth in the contents of the book, and is a lesson of itself.

I have another one here that came to me for review. It is covered over with insects that are green. I suppose that is what they were meant for; but some of these insects in nature are brown or mahogany brown and no one ever saw them of any other color, yet they are green here. Now, what is the use of giving a child any such object lesson as that? When I got that book I suppose I felt about as good natured as a minister would if he were to see a bible illuminated with illustrations from "Puck."

Now, here is another one, simply a little thing for the primary schools; has no pretense of color, but yet anyone who is at all familiar with insects would recognize it in a minute even with no attempt at coloring; yet it tells the truth. Now, all three books are correct, the contents are all right, I have not found a mistake or mis-statement in either, and, with but one exception, I could not find the least criticism. There is nothing wrong about the one, except the cover, and that would condemn it anywhere. This last one is intended for young children, and here is a picture on the cover that means just exactly what it says: "Stories of Insect Life" and you have a true picture on every one.

Now, while I have been talking about insects, because of closer interest in them, they are not the whole of nature by any means; in fact insects might not constitute any great portion of them. There is just as much to be learned in clouds, and flowers, and rocks, even the most common things we have. If I wanted to write a thesis, and a good one, I believe I would take the house-fly, the commonest thing you could find, and get the most out of it.

Now, there was something said about not being able to comprehend or simplify those text books. Dr. Packard has a book "Common Insects," and there are some of the most uncommon insects you are likely to find. There are not one fourth of them that are common insects. He has put in a great deal that not even a grown person can understand. Now, the idea that I try to follow out in this Bulletin just as nearly as I can, is to leave out every scientific term. There has been a little kindly criticism, which I appreciate, because we do not include the Latin names of insects, and I find the criticism is just. One might just as well get used to those names, and I do not know but what it is right that they should get familiar with those names, and I must confess that the criticism was a good one.

Now, in these books these little crisp clear statements could be scientific without being technical—could be true without being abstruse. If you undertake to tell about this thing or that, just get it as near right as possible. So much of that might be done in our ordinary newspapers; you might in fact take the press into partnership in this matter, let the little folks look over the papers and pick out such things as deal in a simple way with the objects of nature, and use your books a little bit less in school and the papers a little bit more. I do not like to have my children come home and know nothing except what is in McGuffey's reader. I like to have a teacher throw out a leader once in a while; tell them half a story and let them go home and hunt up the other half. I would rather they would come home that way, than to tell me something they had gotten by heart in their readers.

It is a big field and there are so many things that can be brought in, and yet after all we should teach children to make observing men and women. Mr. Harrison, isn't that one of the best elements in a successful business life? I rather think that, to teach children to observe closely and get a correct idea, is the best basis you can give them for a successful business life. How is it, Mr. Livingston? Could you grow your seed and carry on your business if you were not a close observer? It seems to me that nature studies are just exactly the startings for making just such men as Mr. Livingston and Mr. Harrison and others of you, and the teachers can give them information; and, as I say, if we can get our newspapers to do a little, and be more careful to be correct, and get our text-book makers to tell us things that mean something, we shall still progress. (Applause.)

Mr. Albaugh: I think all of the old members of the State Horticultural Society will agree with me when I say that this meeting of the State Society has had more of the beautiful and the romantic and the imaginative in its sessions this year than for years past, and it appears to-night that we have a fitting *finale* of all that has transpired in the last two or three days in that direction; enough to make all of us wish that we were boys and girls again, and could go out in the fields and woods and use our eyes a great deal more than we ever had before. It puts some romance into our natures so that our every-day walk, instead of being along the old beaten paths, "smacks" a little of romance.

Mr. Carruthers: There was a gentleman in Missouri, who wrote to this Society to know if it would unite with the Society of Missouri in an effort to lay out some nature work for the school-room. There was a committee appointed by this Society to take that subject into consideration and determine what reply this Association should make to the State Board of Horticulture, of Missouri. We decided to wait until we had listened to "Nature Studies" to-night before we should answer the Missouri Society. I suppose the lady has helped us solve the problem. As an old teacher for many years, I heartily sympathize with the views the lady takes.

The President: The next subject on the program is "Some Desirable Ornamental Trees, Shrubs and Plants and How to Use Them" by Mr. F. E. Carr.

SOME DESIRABLE ORNAMENTAL TREES, SHRUBS AND PLANTS, AND HOW TO USE THEM.

By F. E. Carr.

Mr. Chairman, Ladies and Gentlemen:

I have been asked to speak to you to-night on the subject, "Some Desirable Ornamental Trees, Shrubs and Plants, and How to Use Them." The first part of this subject would be comparatively easy to talk upon, for the list of desirable trees and plants is so long, that an enthusiast on the subject would have no difficulty in telling you about his beautiful favorites, or at least they would be beautiful if the names were left off, until you would be compelled to request the President to call him down.

But the second part of the subject is so difficult, that I do not believe there is a man living who can handle it with any very great degree of satisfaction to any one except himself, and even he would be satisfied only while he was planting them, he would be dissatisfied the next year, and wish he could do it over.

Some authorities in Landscape Architecture tell us that the evergreens and deciduous trees should not be grouped together; others object to shrubs of fancy and colored foliage to group among the green foliage; others say that masses of colored foliaged trees and shrubs are too monotonous; others claim that any, or all, of these styles are permissible in the best plans, according to surroundings and the tastes of the people to be served.

To some people, a tree is a tree and that is all there is about it, and they are easy to please. Then there are some who don't know anything about trees and plants but they will not admit it. I ran onto one such in the shape of a policeman, in Union Square, New York, last September, and I read of another one recently who was an Irish coachman. He was driving his mistress in the park one day, when her attention was attracted by a tree she had never seen before. She called the coachman's attention to it and said:

"Malcolm. what is that fine tree over there?"

"The wan beyont the bench mum?"
"Yes, the large one."
"The wan wit the grane bush ferninst it mum?
"Yes, isn't it a beauty, can you tell me what it is?"
"They do be callin thot a shade tree mum."

I consider that even our very best efforts in the way of grouping and massing trees and shrubs are very poor and weak, when compared with the grand effects in the same line, shown us on every side by nature's handiwork. But we can console ourselves by remembering that instead of the unlimited space, the unlimited quantity of material, and the careless wildness of Nature's work, we are obliged to come down to a few square feet of space, and that, clipped by a lawn mower and raked smooth twice a week.

I shall have nothing to say to-night about the planting in Parks, or in large private places, but will confine my remarks to the small suburban or country place, and to our city homes, where space is very limited.

In selecting trees and plants for such a place, the owner very naturally wishes to plant some choice things, that are not common in his locality, and I think this is right and wise, not that I think less of our native trees and shrubs, but because we can enjoy these natives of our own country at every turn, and along every roadside, and because planting uncommon things, adds so much to the list, and consequently so much to the pleasure. We like our native trees for street planting, and shade trees, and our native shrubs for massing in certain places, but when we get "Inside the Outside gate" and begin to choose that little collection of trees, shrubs and plants to scatter over our lawn, we want something that our neighbors can't see every day along the road-side.

To one who loves his trees and plants, there is a good deal of satisfaction in taking his friend by the arm and marching him up to a fine specimen on his lawn and say: "There is a beautiful and rare specimen; it came from Northern Japan, I planted it when only a foot high, now look at it.

The varieties to use, and how to use them, depend so manifestly on what particular object they are to be used for, that I shall mention some of the needs most commonly met with.

First take the small city lot with the house near the street. How often we are able to look between the houses, clear to the back fence, and how often it would look a great deal better if we could not see so far. Suppose that between those houses a group of shrubbery was interposed, say a Mountain Ash, or a Birch, or an Evergreen, or all three if the space would permit it, and in front of those use a Magnolia Soulangena, or a Japan Snowball with a purple Filbert standing near it, or a Hydrangea Paniculata, or Rhus Copalina, or Hypericum, or lilac, or all of them, with Berberis Thumbergi close under the edge to bring the whole group close down to the ground, this would leave but a small space to keep mown in front, and I am sure the view from the street would be vastly improved.

If a vine for covering the porch is needed, I know no better one for the purpose than the fragrant Hall's Japan Honeysuckle, or for a heavy vine, Actinidia Polygama with its large, glossy, dark green leaves is especially fine. No insects trouble it This vine is especially good with a few sprays of Clematis Paniculate running over it.

Now let us go behind the shrubs we have planted, and take a look at that back lot which is so often made a dumping ground for ashes, potato parings, baled hay wire and old shoes. We will clean it off, plow it up, and rake it down,—It looks better already. Now, we will call into use some of our Native Shrubs.

Along the back fence plant Sumac, or Thorn Apple, (Cratagus Coccinea) or Hazel Nut, or mix them if you like, and plant the wild Clematis Virginica to clamber over it all, and if you wish, add one or two plants of Bitter Sweet on the Sumac, it is fine growing over Sumac. This will give you a little piece of natural grouping. Now, on each side plant uneven groups of trees and shrubs with the taller growing ones next to the line, so that it will make a screen between yourself and your neighbor. With the lower and uneven line toward your own lot, use for these groups any trees and shrubs you may fancy, but I will mention a few that are especially fine.

Abies Pungens (Colorado Blue Spruce.)
Picea Nordmaniana. (From Crimenas Peninsula.)
Picea Concolor (Colorado Fir.)
Retinospora Plumosa (Japanese Cedar.)
Retinospora Plumoso Aurea (Golden Ret.)
Thuya Geo. Peabody (Peabody's Golden Arborvitae.)
Acer Ginala (Ginala Maple.)
Acer Polymorphum Atropurpureum (Japanese Blood Leaved M.)
Arralia Spinosa (Club Tree.)
Cercis Japonica (Japan Judas Tree.) Blooms in May.
Glyptostrobus Sinensis Pendula (Chinese Cypress.)
Pyrus Americana (American Mt. Ash.)
Clethra Alnifolia (Sweet Pepper Bush.) Blooms in August.
Cornus Sanguinea Variegata (Variegated Dogwood.)
Althea, Lady Stanley.
Lanicera Morrowii. Berries in August.
Sambucus Aurea (Golden Elder.)
African Tamarix. Blooms in July.
Viburnum Plicatum (Japan Snowball.) Blooms in June.
Spirea Thumbergi.
Berberries Thumbergi.
Rosa Rugosa (Japanese Rose.) Blooms in June.
Rosa Setigera (Wild Rose.) Blooms in July.

If desired, some Herbaceous plants may be used in the foreground. Following are a few choice ones:

Achilea Ptarmicea Flor Pleno. Blooms all season.
Anemone Japonica. Blooms all Fall.
Anthemis Tinctoria (Golden Marguerite.) Blooms in July till Frost.
Delphinum Grandiflorum (Dark Blue.)
Helenium Antumnale. Tall, bloom, yellow.
Iris.
Oriental Poppy.
Rudbeckia Maxima. Tall, bloom, yellow.

The grouping suggested may be changed so as to have two lots thrown together providing you are on good terms with your neighbor, and neither of you keep chickens. Walks or drives can be made, if needed, without interfering at all with this plan. If carried out in this way it will leave the center open for any use desired; gardening, fruit trees, shade or whatever suits the owner best.

Very often on small suburban places, a little piece of work makes an extra fine background for groupings, such as I have outlined, and it does not hurt my ideas of the "Natural" one bit, to group these shrubs and trees with fancy foliage and blooms in front of the native woods, and bring the whole sloping down to the lawn. The lawn itself is unnatural, the gravel drives and walks are unnatural, and the grouping is in perfect keeping with both woods and lawn.

If a rocky hill-side, or an immense rock, or a precipice happens to be on your premises, don't mourn, but congratulate yourself for white pines and birches grouped together against the rocks together, with Rhus Copalina and Aromatica in the foreground, and Bitter Sweet and Clematis Virginica clambering over them makes a group that any man may be proud of.

If there is a Bog on the place it may be made the prettiest place on the grounds by planting a few clumps of hardy Grasses, Reeds, Flags, Iris, Wild Rice and Lotus in and around it, and giving the whole a background of Willows, Beeches and Hemlocks.

The President: The discussion on this subject is to be opened by Mr. L. B. Pierce.

Mr. Pierce: I cannot hope to improve on the very excellent paper that has been read to us on this subject, but there are some points I might call your attention to. The fashions in landscape gardening change, and within the last few years there has been quite a change to the open lawns and bare open places. The crowded conditions of lawns of a few years ago has brought a change, and you see in a great many places, in cities and villages and even country homes, where there is nothing at all. Now, I think this is a mistake, it is as extreme as was the over-planting.

I wish also to call your attention to another thing that is wrong, and that is the planting of a row of side-walk trees—they are found in the cities—to catch the dust They shade passers-by but otherwise they are a nuisance. They suck the strength from the ground and prevent any use of land inside, more than to grow grass, and they do not harmonize with anything. They are not perfect in themselves. If you ever noticed a tree in the open field, you noticed that it had a circular drip from the outside of the branches, while the drip of the sidewalk tree is much the shape of the shingle with the corners sawed off, or a schoolboy's slate. It is a parallelogram. Now, if we could get rid of these trees we would be accomplishing good in certain directions.

Those of you who live in the country, as most of you do, have noticed the wonderful development of trees when they grow well. In the town where I live there are Beech, Elm, and Black Walnut that stand in one fence row and drip over the other fence row sixty feet away. I do not know whether that drip is as far into the field, but they must have a drip of 120 feet in diameter, or more than one-fourth acre of ground is covered. It is a beauty of itself, and one such a tree in a door-yard would be worth 100 crowded trees, though you cannot see any beauty in it. And what is true on a large scale is true on a small one. There are lots of places in this town, I presume, that have from fifteen to twenty trees in the front yard, when really there ought not to have been more than two or three. If they had two or three, they would be more beautiful than they are.

Now, you do not need to have any great variety to get beauty. A Jonathan apple tree grown by itself is as handsome an ornamental tree as you can have . The same is true of the Grimes' Golden or Belmont. Some of them are quite beautiful. They grow beautiful with age. I have hanging over my lane, the limb of a tree, and we run under that limb with loads of hay eleven feet wide and ten feet high and have plenty of room. It reaches out and makes a picture, and I think it is quite ornamental. I have an apple tree standing near my house, a Western Beauty, that has a drip of about forty feet, and the years when it bears fruit it is quite handsome. Of course there are other things more ornamental than apple trees.

Now this tree, Retinospora Aurea, shows what it can be in the fall. It is almost like burnished gold. I do not know of any one like that in our county except one planted on my place. It is not high-priced. I think Mr. Harrison would send you a tree like that for fifty cents, and get it to you in good shape. They are just the thing to plant in a small yard where it is not smoky. By observing and looking over the catalogue, you can get something that everybody hasn't planted. Go through this town or Canton and you see almost every door-yard has a cut-leaf Birch. It is important to quit planting everything like your neighbors'.

The choir was again called upon and entertained the audience.

The President: The report on ornithology by L. B. Pierce is next in order.

REPORT ON ORNITHOLOGY.

By L. B. Pierce.

Birds in general appear to be getting scarcer. Red winged hawks and red headed woodpeckers appear to be about extinct in the writer's section.

Improved fire-arms and a war of extermination is probably the cause of the dissappearance of the hawks. Meadow mice and rats are over abundant, but whether the scarcity of hawks and owls has anything to do with this increase, is a question hard to determine. The only hawk I have seen this fall was hovering over my corn-field, swooping here and there close to the corn-shocks. Husking revealed the presence of hundreds of field mice and a bad waste of grain. The drumming of the native partridge has not been heard for two years, and is practically extinct in Northern Ohio. To make up for this, the last Ohio Legislature passed a bill appropropriating $15,000 to be used in introducing the Chinese pheasant. Several hundred have been let loose in the eastern part of the state, and are to have free range over the farms for three years, when the farmers will have the pleasure of seeing a horde of city gunners let loose to shoot the birds which have multiplied and waxed fat upon their crops of grain.

It is worthy of note that a Legislature which grudgingly gave $1000 to Horticulture, gave fifteen times that amount to saddle upon the grain production of the State, a new and voracious pest just at a time when the native variety of the same species had ceased to be in evidence.

As quails are shot out of season, and transferred to the capacious pockets of wandering sportsmen, I have no doubt that many of the Chinese pheasants imported at such great expense, have already made delicate feasts in the households of unprincipled gunners.

The extinction of the red headed woodpecker in the more highly cultivated portions of Ohio, is probably the result of natural causes, and has little positive bearing upon either entomology or forestry. Decayed stubs and dying trees are not as numerous as formerly, and sound cedar telegraph and trolley poles make poor substitutes, either in nest building or grub hunting. This year the downy woodpecker or sap-sucker, has been particularly destructive to wood cornices infested by the wood boring or solitary bee. This bee, as is well known, bores perpendicularly three-fourths of an inch, and then longitudinally a foot or more, leaving a thin shell of wood next the edge or side of the board. At the end of the tunnel, she lays an egg and then packs in about half an inch of neatly cut leaves for fodder. This process is repeated until the tunnel is filled. The egg hatches, eats the fodder, spins a web, passes into the pupae stage, and finally becomes a perfect bee. Naturalists have been at a loss to understand how the bees hatched first, get out by those who have yet three weeks of prison life before them, there being about that time required to fill the tunnel. I have seen the statement by an entomological writer of half a century ago, that this was one of the anomalies of nature, that a mother should lay a dozen eggs and make provision for the hatching of each one when only two or three could live. The downy woodpecker has solved this problem and very likely was doing it half a century ago.

He seems to know at which end of the tunnel are the juiciest and most mature grubs, and pecks in at the right spot. Three or four of the large bees suffice for his wants and he abandons the lead. He does not have the wit to return to the place for another meal, and thus a rear entrance is left for the remainder of the brood, who come out in one, two, three order.

Together the solitary bee, who labors all summer to build and stock her tunnels, and the sap-sucker who spends the winter in raiding them, form a very charming combination for the ruination of soft wood cornices.

Formerly the solitary bee worked only in unpainted wood, but latterly it seems to have learned that paint, like beauty, is only skin deep and easily conquered. It is another instance of insects conforming to changed conditions. The downy woodpecker will go through an inch pine, or whitewood board for other insects There is a fat wire worm found in granaries, cribs and barns, called by farmers the bran worm and generally found in company with large, black beetles. These worms often are found between the outside of beams and the weather-boarding, and several times I have found the woodpecker pecking great holes to get the worms. A dismal December day is made still more dreary by the rat-ta-tat of the woodpecker upon your buildings, and the only way to enliven the dismal situation is to take a Flobert or 22-caliber Winchester rifle and try to shoot at something just in range with the bird. That something may be the moon, or the fag end of a cloud, it makes little difference so far as the bird is concerned, provided your aim varies enough to accidentally hit the bird and thus clear yourself of the charge of willfully killing protected birds. The only birds which seem to hold their own, are the winter staying varieties, and we owe in Northern Ohio the presence of the most beautiful—the crested red bird—to protective laws passed in Ohio and Pennsylvania during the last dozen years. This bird stays mostly in the woods during winter; but comes into the orchard with its varied songs and cheery whistle early in the spring. It will never become a nuisance. The English sparrow seems to be increasing in number without increasing its usefulness.

Although not strictly in the line of ornithology, it seems best that I should call attention to matters somewhat allied and of great moment to all orchardists and nurserymen. I refer to the rabbit nuisance. The rabbit is now protected by law at all times of year except a few weeks in early winter. The result is that it is increasing in numbers, and annually brings out an army of sportsmen who run riot over farms and gardens leaving gates open and throwing down fences. The nuisance has become so pronounced that farmers are banding together in some counties and refusing all hunting permissions. This, I think, is only a temporary shifting of trouble. With the protective law, rabbits will soon become so great a scourge, that, killing them in the hunting season will be the only remedy, and to block this way is at the best a short-sighted policy. I dislike to have hunters tramping through my berry plantations, breaking canes and tearing layers loose, but this year it seemed necessary to permit hunting, in order that my farm need not become a haven of refuge for all the persecuted bunnies in the neighborhood. Rabbits are very destructive in the vegetable gardens of Summit county, eating young cabbage plants and peas, and later injuring cauliflower and peas just ready to pick. Some of the worst complaints come from just outside the city limits of Akron.

Mr. Harrison: I do not believe in having laws and not obeying them. I do not believe in breaking laws that we have. It is absolutely true that one of the worst pests that the nursery-men have is protected by law. There is a little time when these city hunters are allowed to hunt rabbits. Of course the owner, if he sees fit to, may object. But the law is quite severe on any one that kills a rabbit, or that uses a ferret to ferret them out of their holes so that they will not destroy the crops. The farming community ought to organize against such unjust laws and against the city sportsmen. That is all that $15,000 was appropriated for, for the city sportsmen. The farmers are expected to raise these birds for the city fellows to come out and shoot and to tramp down their premises. It is time that farmers were organizing and having somebody to see that the laws were enforced.

Mr. Aultfather: I live in a section where there is a great deal of hunting done, and I have on my place a small apple tree that was shot off by hunters. That was the effect of shooting at rabbits. The hunters have done me more damage than the rabbits did. Last season the rabbits did more damage than they had done in thirty years. They peeled thirty-five apple trees for me about four years old. We have organized and do not allow anybody to kill them, and they have become very plentiful in our section.

The President: As we have a great deal of business on the program for to-morrow, you will pardon me for calling up some matters this evening. You all know we lost one of our ad interim committeemen by death since our last meeting, and I have asked brother Pierce to prepare a proper memorial, which he will now read.

IN MEMORY OF MR. FRANK FORD.

In March of the present year, this Society had the misfortune to loose by death one who had been long identified with horticultural matters, and whose varied experience and practical knowledge was often used to enliven and interest the meetings of the Society.

Mr. Frank Ford was born in the mountain portion of Massachusetts about sixty years ago, and something more than thirty years ago moved to Ravenna, Ohio, and began the practice of his profession as an artist. He had a taste for rural occupations, and gradually engaged in the breeding of fancy poultry, Jersey cattle and Berkshire swine. He gradually added the growing of fruit, the production of nursery stock, and finally became widely known in connection with his two sons, as a producer and dealer in seeds. At the time of his death he was President of the Portage County Horticultural Society, and ad interim member of this society from the tenth district. He had been for many years a pretty regular exhibitor of fruit at leading fairs, and was the introducer of several new varieties, the most widely known of which are the Wachusetts Thornless blackberry and the Crandall currant.

In the death of our friend, so earnest and active along those lines which make American homes the brightest on earth, Horticulture loses much and it is with sincere sorrow that this society mourns his loss, and extends to his family and friends its sympathy in their deep affliction.

Such lives, however, do not stop with death, for the good they do lives after them. The earnest practical life of Frank Ford is a fine example of what may be accomplished in horticultural work, and worthy of being copied by youth with horticultural tastes.

The evening session was thereupon closed with a musical selection by the choir "Fawn Footed Nannie."

MORNING SESSION.

FRIDAY, December 3.

Convention was called to order at 8:30.

The President: The first subject on our program this morning is, "Is it profitable for an Orchardist to own and operate a cold storage plant?" by Mr. F. R. Vergon.

The Secretary: Mr. President, Mr. Vergon has handed me his paper with the request that I read it. I might say by way of explanation, that the topic as sent to Mr. Vergon included the question, whether it was profitable for farmers to own cold storage in partnership, or on the co-operative plan, as well as cold storage for the orchardist. Mr. Vergon has prepared the paper for the reason that he has had practical experience in the use of a cold storage plant. We want him to tell us what he has accomplished and how he has accomplished it.

IS IT PROFITABLE FOR AN ORCHARDIST TO OWN AND OPERATE A COLD STORAGE PLANT?

INCLUDING THE QUESTION, COLD STORAGE FOR THE FARMER, AND PARTNERSHIP PLANTS.

BY F. P. VERGON.

The question, will it pay, is a very important one, not only in regard to cold storage for farmers and the orchardist, but comes up in our almost daily operations. There is not much doubt but that the orchardist who has twenty acres or more of orchard in good bearing, and knows that he may realize a good crop about every alternate year, whould be better off to have a cold storage of his own, especially if his location be good; convenient to good local markets, shipping facilities, water from which to harvest ice, etc., etc.

For the ordinary or average farmer, who has an orchard, the case becomes more doubtful, if it will pay or not, for him to have a cold storage.

Farming is the greatest business on earth, of itself; and few men seem to have the ability to run specialties of so much importance successfully, in connection with the farming operations. He cannot do everything well. We see plenty of evidence where farmers have wandered off into some outside enterprises and have made failures of them. It seems now that this branch of husbandry is a science, and requires the most careful work and attention in every detail. The work must be done at the proper time, to be successful in keeping down the horde of enemies that otherwise would destroy the crop, and possibly the trees as well.

In regard to neighborhood, or partnership cold storage, I have no faith whatever in it, for so many reasons that I shall not entertain the idea. Will only say that in my experience, where I have placed a little money which was not under my own control, I have almost invariably come out of, as the boys say, "The little end of the horn."

I have been a farmer all my life, and took to trees and orchards in early boy hood; and would not discourage my brother farmers in apple culture. Grow plenty of them for yourself and neighbors and more too: it is always better to have some to sell, than to have to buy; but I do believe that the great bulk of apples, to supply the city markets, will be supplied by the orchardist. And he is the one that needs and will realize the greatest advantage, and should do so, from cold storage.

In my opinion apple culture and storage for their preservation will become more and more a business of itself. The year 1884 my orchard was loaded with a fine crop. Early in the fall I began to wonder what to do with the crop. I had the experience of the past, which was usually anything but satisfactory. After a crop is harvested in piles under the trees, or in temporary bins in the orchard, and winter is staring you in the face, I do not like to recall the unpleasant sensation of being entirely at the mercy of the buyers. Since 1884 the satisfaction at harvest time has been just as it is in harvesting the corn crop, and putting it in the crib—the corn is safe, and the apples are safe.

Until we are ready to sell, the option in this case is very important.

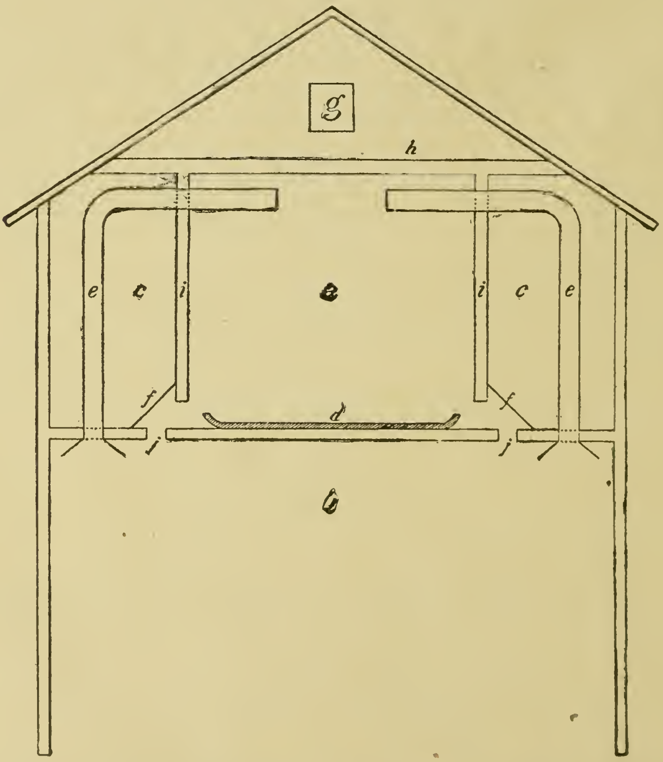
It was that same year of 1884 that I more fully realized the natural advantages that I had, to more fully pursue on a larger scale apple culture and their preservation; having good orchard land and excellent frost drainage, Greenwood Lake, adjoining, on which to harvest ice; and located just outside the city limits of Delaware, which, with its colleges, is the finest little city in America; and which affords a good *local apple* market, which kind of a market is always the best as far as it goes.

Of course, the bulk of our apples are shipped. In speaking of this, I believe that many farmers have never known what their farms, or at least a portion of their and, is best adapted to by nature, and how best to take advantage of their environments. It is better to locate a cold storage plant some distance from any other building; it will be less likely to be infested with vermin and in less danger of fire. Lay it out square with the world; the advantage of this will be apparent in the description of my own plant. In 1884 they were not plenty. I had never seen one.

I patterned after the retail butchers' refrigerator, but built it 24 feet square, with a sorting and packing room twelve feet broad, on the north side, shed fashion The main building has a cellar under it three feet deep and four openings in the wall, on the east and west sides, one foot wide by four long, equal distance apart, covered with heavy wire screen. Batten doors on the side of the building can be closed at will.

The cellar is only used for ventilation and heat for fruit chamber, when necessary. The balloon frame is put up with oak joist 16 feet long, 2 x 12, two and one-half feet apart; and sills, double; patent siding, and thoroughly packed with saw-dust inside, as it is lined up; packing room, same way; floor, double, and filled, same as sides. The floor above is not double, and is placed three and one-half feet below the top of the square. This makes room for the ice chamber above, which is sixteen feet square, seven feet high, made with 2x6 scantling, lined and packed with saw-dust. The floor in the ice chamber slopes a little to the north for the drip, and is covered with best galvanized iron. An opening six inches wide in the floor around the ice chamber lets the cold descend. Flat, funnel-shaped conductors, made of galvanized iron, two on each side, east and west, broad end down, extend just through the floor into the fruit chamber, to convey the air from ceiling below to center of ice chamber above. The warm air arises and the cold air descends. There is a difference of one and a half degrees in temperature between the floor of the fruit chamber and the ceiling above. It is seen that there is a space of about three and one-half feet around the ice chamber, which admits of a little stairway inside of fruit chamber, on north side—small trap door at top of stairs to reach the work above. The floor is covered with six or eight inches of sawdust.

All the doors are made flaring, double and packed. The only door by which to enter fruit chamber opens into packing room. One small door above, in each gable end, just above the square. The ice is taken in through the south one of these. A rope is attached to these doors, opened and closed from the ground, for ventilation.



EXPLANATION OF FIGURE:—*A*, Ice chamber. *B*, Fruit room. *C*, Space between ice chamber walls and side of building. *D*, Galvanized iron pan on ice chamber floor. *E*, Pipe conveying warm air from top of cellar to top of ice chamber to be cooled again. *F*, Hinged board to cover cold air opening *G*, Ventilator in gable. *H*, Attic over ice chamber. *I*, Walls of ice chamber. *J*, Opening for cold air to descend to fruit room.

A small wooden trough catches the drip from the ice chamber, which runs into a conductor and empties into any small vessel in the cellar, forming a trap. Roof, one-third pitch, with a neat little ventilator on the middle of the comb, and a little projection at the roof on the south gable end to which to attach the pulley to elevate the ice. The entire structure should be strongly built, and as nearly air tight as possible. The beams below and overhead should not be less than 10 x 14 inches, best oak, with posts in the center. The cost of the plant was about $900, and has proved quite satisfactory; do not know that I could better it now for my purpose, except to have air chambers in place of the sawdust.

The cost of operating it is principally the ice, which costs here usually $1.50 per ton at the ice house. We put in about twenty tons a few days before the apple harvest is commenced. This amount runs us until ice forms on the water, then it is filled full; capacity, forty tons. This can be done ordinarily for $25, if the hauling is not too far; total cash cost for annually, $55, teams not counted in.

In my case it does not cost so much, as I have an ice house at my lake, and conveniences for cutting and handling the ice. This runs the cold storage until the last of June; by this time the apples, with us, are closed out. After winter has set in for good, we put a couple of loads of sawdust around the walls. Then the cellar warms up in extreme cold weather. If we find that there is danger in the fruit chamber, lift out one or both of the trap doors in the floor. The six-inch openings in the floor around the ice chamber can also be closed, if necessary.

It will be found, after the contents of the house are cooled down, that the temperature moves very slowly; we hold it as nearly at 35° as possible. The crates are stacked up as close as possible, and not moved, only as orders are filled. For best results, it is not best to let apples hang too long on the trees. When the seeds are ripe and the apples well colored, it is about time to harvest. The ripening process of breaking down and getting mellow, should be delayed and finally go on in the fruit house. The keeping quality has been very much improved since we commenced spraying. Apples that are bored with worms and cracked open from the effect of scab, will not keep anywhere. Such varieties as Belleflower, Snow Apple, Rambo, Jonathan, Peck's Pleasant, and Spy, that you wish to commence marketing about holidays, had better be picked a little the earliest. It must not be presumed that nothing is lost in cold storage. We lose there, as well as anywhere else, only not nearly so much. Good keeping varieties do not lose so much as poor keepers. The loss on Rome Beauties, Ben Davis, Minklers Baldwins, and Stark is usually about four per cent. And they are the principal varieties among our late keepers. Some seasons they keep better than others. Two years ago, the building getting a little old, we lined the fruit chamber inside with heavy paper, such as is used in frame buildings for protection from cold, with good results. We have never been infested with rats about the fruit house; but the house mice and that other little fellow with long tails and thin ears, do some damage. How they get in I do not know; either they slip in when the door is open, or get through where there are no holes. The field mice get in to some extent, but they ride in, in the crates sometimes, when they are as plenty as they are this year. They draw the leaves into the crates, between the large apples, when they are left out filled overnight; and get carried into the fruit house in that way. It is difficult to get entirely rid of these little pests: can trap and poison some, but they soon "Catch on." We feed them shelled corn in the fruit chamber, and save many apples by it. It is mostly the seeds of the apples that they are after. This is seen in the number of decayed apples that are dug into the core by them, for simply the seeds.

The President: Gentlemen, the subject is open for discussion. I see Mr. R. A. Hunt is assigned to open the discussion. He is absent and I do not know whether he has sent any paper or not.

The Secretary: I might say that I do not usually put a name upon the program without first having a promise that the person will be present. But in Mr. Hunt's case, his reply was delayed for some reason or other until after it was necessary to print the program, and after the program was out, I heard it would be impossible for him to be here. He did not promise to attend.

Mr. Albaugh: There is one thing in Mr. Vergon's paper that I agree with, in regard to the use of paper and sawdust. In the nursery business we build what we call cold-storage or loading houses, where we keep our small plants, such as apples, cherries, pears and quince seedlings and where we can take care of our trees through the winter. It is not a cold-storage house in the real sense, because we do not keep ice. Some fifteen or eighteen years ago, I built a house of that kind on top of the ground with a wall underneath it, about twenty-eight by eighty feet I think it was, and I made a space between the outer and inner walls of six inches and filled it full of sawdust and rammed the sawdust down as hard as I could, and then lined the inside of the rafters with half-sheeting, and filled that space up to the top of the rafters with sawdust and rammed it down and then put shingles on top of that, but I found that the sawdust shrinks wonderfully, and it wasn't long until we could begin to see through the lining.

We had occasion to build another house of that kind thirty by one hundred feet, with a self-supporting roof, and we put matched weatherboarding on the outside, made the studding six inches wide, and lined it under the matched weather-boarding with good building paper and didn't put in any sawdust, but put a ceiling on the inside after lining the inside with building paper; and I believe if you would build a cold-storage house now, and instead of using sawdust, would double line it on the outside and inside with paper and leave that air space between, I think you would find it more reliable than sawdust.

Mr. Harrison: I think Brother Albaugh is on the right track. I would not have the saw dust in my walls if it could be put in for nothing. It will continue to settle in spite of all the ramming you can do. We use building paper. We have an ice-house about fifteen years old one hundred and fifty-six by fifty. We have two air chambers in it and we stack our ice right up to the roof. Of course, in that, we have three thicknesses of paper—two air chambers. I think it a great mistake for anybody to use sawdust.

Professor Green: We have a model here of a cold-storage room designed by Mr. Carr, and I would like to call on that gentleman to explain it.

Mr. Carr: Professor Green made a little bit of a mistake when he said that it was designed by Mr. Carr. It was designed by Professor Green and built by Mr. Carr.

The President: I want to call your attention to the fact that object lessons attract attention every time. Let us have them every time we can.

Mr. Carr: We were thinking two or three years ago of building a cold-storage house, and I had seen one, didn't know anything about them, and I went out to Woodland Avenue, Cleveland, and called on a party there who had a large cold-storage house. I managed to get into a little 6 by 8 ante-room in front and stated that I was thinking of building a small cold-storage apparatus for private use, and thought perhaps by calling on him I might get a pointer or two in regard to it, and he very politely, but very shortly, informed me that it would be very desirable if we would get our information the same way they did, (laughter) and I proceeded to do so.

Now, the idea in this one (indicating) was to use mineral wool for packing the walls. This is twenty feet square and the walls are supposed to be sheeted, paper between, and these spaces packed with mineral wool, and then, if desirable, one-inch or two-inch strips put on that, and a second sheeting if it was necessary to have an air space. We propose to leave that and try the double wall outside, the single sheeting inside and the mineral wool between. Then if we need the air space, we propose to add it simply by spiking studding to the inner walls and re-sheeting. This opening was to have an ante-room over it, that is, a storm shed, and the ante-room would be built tight, sheeted and perfectly air-tight, so a person could pass into this and close the door, and so pass into this room without creating any draft or losing any cold air.

I designed ours to be a general ice house and cold-storage in connection, so I left this one side of this ice house open, and we would fill the ice-house from this side as you see. We would fill the ice-house until you got up to this deck, and then fill from the other room until it is full. The cold-storage part has a tight ceiling. We designed to make it as tight as we could, and lay a coating of mineral wool four or six inches over it.

This is the roof (indicating) over all, and I haven't decided in my own mind about the ventilation. That is a point I want Professor Green to bring out, and also the circulation of the air around the ice and in the cold-storage room.

When we were intending to build this, I had a contractor figure on it just as you see it before you, each room twenty feet square, and eighteen feet studding, and the whole cost, the lining paper, lumber and mineral wool, just as I have it, is about $700. The building is twenty by forty feet.

Mr. W. R. Beatty: I have had some experience with cold-storage houses. A number of years ago my father had a crop of apples and the price was only ninety cents a barrel, and he built a cold-storage house, cementing the floor and lining the building with up-and-down sheeting. He left an air space of about eleven or twelve inches, put in another frame-work and lined that with matched lumber, and packed the whole space between with sawdust. He filled the house full of apples. The dimensions of the building were fourteen by eighteen feet and twelve feet high, and in April he sold his apples; after sorting out fully one-half that were spoiled he sold the remainder at ninety cents per barrel, a dead loss of one-half. I have had some experience in the Delaware market with apples myself. I find that the "Missouri Red" as they are called or "Ben Davis," when we are selling at $3.50 per barrel, can be had in the Columbus market at $3.00 per barrel. I had a car-load of apples in Delaware two years ago, and I think I lost one-half on account of poor prices. I had to contend with the Columbus wholesale market.

Now, I think for a private place, a man who had three or four acres of orchard, a cold-storage would not be profitable. I do not agree with Mr. Carr in putting in mineral wool. I think it is made air-tight by lining it just as efficient as mineral wool. I think sawdust should never be used, because, as Mr. Albaugh has suggested, you cannot pack it so tight that it will not settle from the covering at the top. And a small plant built on the dead-air space plan is equal to or better than any cellar that we can have in the country or on the farm. My father has used these buildings with the sawdust in the walls for storing potatoes and apples and cider and everything of that nature that would otherwise be stored in the cellar, and he has done it effectually.

Mr. Smith: I bought some land in southern Tennessee six years ago, and adjoining me was a cave probably a mile and a half in length. I went there several times, and persuaded Dr. Powell who lives there in St. Joe, to put some apples in that cave for three different years, and they say they never saw apples keep in cold-storage as they did in that large cave. I saw apples there in March or April that certainly were as nice as I ever saw in the Indianapolis cold-storage. I would also say, that I have had experience for twenty-nine years in Missouri and the caves keep the apples there as well as in Tennessee.

Professor Green: I think I may say the temperature for apples ought to be pretty near freezing, about 33 to 35 degrees. Ought not to get much above 35.

Now, in regard to this model, there is one thing that must be remembered. The ice house must have ventilation, but the ice chamber needs no ventilation. The ice chamber and the cold storage room below need no ventilation at all.

Mr. Pierce: A gable roof will ventilate it.

Professor Green: That is intended to keep the sun off. It would not do to have this open. You would have to have a partition across there too.

Mr. Pierce; How long would ice keep in there?

Professor Green: Judging from experience, I would say until the middle of the summer.

Mr. Vergon: We have never had to refill it after we filled it completely. It must be understood that this chamber in my little house is entirely enclosed, and there is a space around about 3½ feet, and the walls are also packed, and it is protected very well indeed.

Mr. Carr: There are two points that have been brought out. Now, we haven't built this yet, but we expect to build next season, and I want to build just the best way that can be done, if we can find that out. Then there is a division of opinion on the packing. Of course I should not use sawdust, but if the air spaces are equally good, I would like to dispense with the mineral wool. If they are necessary I want to know it.

Professor Green: The air spaces are not as good as the mineral wool, and for this reason, the air will circulate through those spaces. Now, the mineral wool will keep out all sorts of vermin. I would not use sawdust because it rots and settles, and the mice and rats would dig it out. I would prefer the air space to sawdust, but mineral wool is preferable to either. It would cost only $50 to put the mineral wool in a building of that sort, $16 a ton. There have been experiments made which show that mineral wool is better than the air space. I cannot give you the per cent. now, but I can refer to the experiments and show that it is true.

Mr. Carr: Would you have a small air space besides?

Professor Green: I am not sure that I would. I hardly see the necessity of it, except between the ice and the mineral wool to keep the dampness out of the mineral wool. Of course if the mineral wool got damp, it would not be a good conductor.

Mr. Harrison: I do not think a good sized cupola on that building is sufficient ventilation. Our experience is, that it is not sufficient. Our ice will melt down a good deal faster if you only put cupolas there.

Professor Green: I want to distinguish between the two ends. You don't want any ventilation over the cold storage, but you do over the ice.

Mr. Harrison: That is filled with ice, and I do not know why you don't want cold air over it just as much as this.

Professor Green: Because that is covered up and we don't want air below.

Mr. Whitney: I understand where they want the circulation of air, is down in the lower room. If that is so, the air wouldn't be cold.

A Member: That is right.

The President: Then I do not see why you couldn't have your cupolas just as Mr. Harrison said, over each end, and no partition.

Professor Green: You can do that.

The President: But you don't want it down the ice chamber over fruit house.

The Secretary: The ventilation in the ice chamber comes from the cellar.

A Member: Do you regulate the ventilation in the cold storage?

Professor Green: In our cold storage we keep the temperature about 34 or 35 degrees.

Mr. Sweet: Our worthy president lives close to the cold storage plant operated by Mr. Hunt, who puts in a good deal of ice and a good deal is left the next fall. I wish he would explain that plant.

Professor Green: He puts in a large quantity. For this quantity I was told that it would last until the middle of the summer. If you want it to last longer, you put in more.

The President: There is a difference between Mr. Hunt's cold-storage and this house. In Mr. Hunt's cold-storage house, the ice rests upon the zinc, and the zinc is exposed to the cold-storage room beneath. There is no circulation of air around the ice to and from the cold-storage room, and that perhaps may tend to make the ice last longer. Mr. Hunt has told me that the ice lasts from one season to another, and they do not have to fill it, only as they fill it from the pounds.

Mr. Pierce: Isn't the circulation of air a wrong principle?

Professor Green: Mr. Hunt's air from below strikes against the galvanized iron, and in this, it does not. Mr. Hunt has a drip, but there is no drip here. His cools right through the galvanized iron: this cools by circulation of air.

Mr. Beatty: Has anyone experimented as to the humidity of the air? How much moisture should be in the air.

Professor Green: I think you could not get too much.

The Secretary: I built a small storage last year, or modified one that I had, on this principle, with the exception that I didn't have this ice-house adjoining. The only difference is that I keep the fruit in the cellar. I have a galvanized floor. Mine slopes to one corner, and in one corner I have a pipe running down into the cellar, out over the drip. I found that the ice in here would not last through the entire season, and we now propose building an ice-house immediately adjoining, or near-by. We do not use our cold-storage for the entire season. The object for which we use cold-storage is to retard the sprouting of our seed potatoes in the spring. After we get those out in June, we have no use for the cold-storage until the Bartlett pears are ready. We do not keep a dairy. We do not need the cold-storage through July or August, so we would save the waste of the ice during the heat of the summer. Then in the fall we should draw upon the ice-house and put what is necessary into the cold-storage. Some of my men didn't think that this ice should be put in this ice-chamber without ventilation, but they forgot that the air was continually coming up from the cellar, and circulating around the ice, and has become cool by coming in contact with the ice.

Mr. Carr: I would like to ask Mr. Farnsworth if he has any other circulation except this around the outside?

The Secretary: No, sir. My building is only a small one.

Mr. Whitney: I have had some experience with cold-storage house building. Had some of the same experience that Mr. Carr had. When I began to think of building a house, I knew nothing whatever about it. I went to Garrettsville to get some pointers, but until I assured them I had no intention of ever keeping eggs, they would not allow me to see the room at all. Their house is fitted for keeping eggs, and they said that a house that will keep eggs will not keep fruit or meat. The storage room is kept as near air-tight as possible, sometimes so that a candle will not burn in it. They get rid of the drip by means of some drug or article they have discovered, with the aid of various pipes and pans. There is a fine cold-storage building in Montville, built by a company for keeping eggs, but it is a failure for that purpose, yet it will keep fruit and meat. The ice lies on a floor of lattice work, under which are long wood troughs to catch the drip. These are provided with long valves or leaves at each side on hinges, and are opened to allow cold air from the ice to pass through, and by closing or opening, the temperature of the room can be regulated at will. This is no doubt the best plan known for keeping fruit, but it is too expensive for most people.

I built a house 15 by 28, with an ice room eight feet wide on one end for storing ice for dairy purposes, at a cost of about $200. Made the wall sixteen inches thick, with double studding and filled with saw dust. The ice room was not provided with sufficient ventilation, so there was too much drip and the ice floor will have to be rebuilt before it can be used with ice. It however, proves a good room without ice for storing fruit and vegetables in winter, being cool, and yet not freezing. The matter of covering the ice with sawdust seems to be misunderstood by some. There are two styles of ice rooms. In one, the ice is laid on a bare galvanized iron floor, or pan, and the cold is from the bottom through the iron. In this case the ice is covered. In the other style, the cold air is gained from circulation over the top of the ice, and in this case the ice is not covered.

Question: What temperature is best for eggs?

Mr. Whitney: I do not know, but it was pretty low. I think they said their ice-chamber held eighty tons of ice. In that ice house in Warren, they kept their ice two years. They didn't put in a cake of ice last winter.

Professor Webster: There is a phase of cold-storage that most of you will overlook, or perhaps you don't know of it. Now, one of the little problems that is to solve the big problem as to whether marriage is a success or not, is the keeping of winter clothing, furs, etc., that some people do not use during the summer, free from moths and insects. Within the last few years in the larger cities, the lady of the house, when she wants to put those things away, simply telephones to the cold-storage people to come and get them, and put them in the cold-storage at a temperature below forty degrees, and keep them until the fall, when she comes back from a summer vacation. When she wants them returned, she telephones to the cold-storage people, who charge a certain amount for the storage, and they are returned. The cold-storage people thus use their plant when otherwise it would be idle.

The President: It will be necessary to take the remaining ad interim reports.

AD INTERIM REPORT FOR THE SECOND DISTRICT.

By N. H. Albaugh.

The counties of the Second District lie west, centrally in the state, and on the western border. The land is mostly flat, and better suited for the growing of tobacco and the cereals and grasses, than for fruit—except possibly, the small fruits. Much of the soil is the rich black muck of that low region.

Apples were generally a failure in the District. Pears a little better; plum buds mostly killed by the 16° below zero, the previous winter, along with which went peaches and sweet cherries. Of the sour cherries, a full half crop was borne; the best varieties being the Early Richmond, Dye House and Montmorency, and sold for good prices. Fairly full crops of the small fruits were harvested. Strawberries were rather low in price; raspberries better; blackberries so-so, and currants and gooseberries paying the best of all. Nothing especially new in varieties. In strawberries, kinds arise and fall with the capriciousness of a summer zephyr; some years one and some years another variety taking the lead. Warfield and Haverland being among the best of the old sorts, and Greenville close by.

In raspberries, Eureka and Kansas lead in Black caps, and Cuthbert and Miller in the reds. The purples, Shaffer, and its twin sister Columbian, not much planted.

In blackberries, the Eldorado has made a big step toward the front, both in flavor and size, as well as in good bearing qualities. Victoria, Red Dutch and Fays rank in this order in profitableness.

The old Houghton gooseberries have not yet given up to even such good varieties as the Downing. The Industry is large and fine, but hardly tested sufficiently to displace the old reliable, but smaller sorts.

There are few, if any, large commercial orchards in the District—except several plum orchards of from a thousand to five thousand trees each in Miami county and it is amateur fruit growing, and for home use only, that commands the attention of the planter. No San Jose outbreak has occurred in my District.

Two County Horticultural Societies exist in the District; those of Miami and Darke counties. Logan and Champaign should be able to sustain such societies

All through the District, too few new plantings are made of fruit trees, to even keep up the orchards to what they were twenty years ago.

AD INTERIM REPORT.

By E. M. Woodard.

Last year the fruit crop in our section was very abundant in all varieties, except peaches, and the prices were ruinously low. This season the supply has not been so large and prices a shade better.

As a rule, but little planting, comparatively, has been done.

The season was not favorable for newly set strawberry beds, unless planted *early*, and the ground *thoroughly* worked. The necessity of frequent stirring of soil in the raspberry plantation was clearly shown. The season being dry, many lots of Greggs, not cultivated frequently, began to dry up before picking time, making the berries *small* and dry. The varieties mostly grown are Palmer, Souhegan and Gregg for blacks, Cuthbert and Columbia for red; the latter seems to do very well.

A "spell of weather" in February killed most of the peaches in our section, although there were a few bushels in the eastern part of Lake county.

The peach yellows have made sad in-roads in our orchards, this with the failure of a crop for two or three years, has rather discouraged planting, and should everything be favorable another year, the crop cannot be over abundant.

The pear blight still continues to work, although not as vigorously the past season as before.

The Keifer seems to be as well able to resist its ravages as any variety. Just what the result will be when all the Keifer trees come into bearing, remains to be seen.

In regard to apples, people in our section have been in the condition of the little boy whose mother said to him:

Mother—"Johnny, I see your little brother has the smaller apple. Did you give him his choice, as I suggested?"

Johnny—"Yes'm I told him he could have his choice, the little one or none, and he took the little one."—Tid-Bits.

It has been little ones and in many cases wormy and imperfect ones or none.

Early in the Spring many of the trees blossomed and the expectations were for a fair crop of apples, but from some cause, the fruit all dropped when small.

I do not now recall but two orchards that were sprayed thoroughly, and in both of these there was a fair crop of fruit. In one, the trees were first sprayed before the buds opened, again after the blossoms fell, and three times thereafter. The other orchard has been well taken care of and was sprayed two or three times.

Query—Did the spraying account for the fruit produced?

GRAPES.

We have had a few cars of grapes, I could not collect the exact figures covering the entire output, but the total will be somewhat less than that of last year which was about 2000 cars. Prices have been low, but will average a trifle better than last season; probably 7½ or 8c per nine pound basket.

One point was favorable; a greater proportion of cars were sold on track, and fewer consigned.

We have, within the past few years heard considerable about the dishonesty of commission merchants, the trickery of nurserymen, and the lies of the tree peddler, but until grape growers will put on the market only fruit that is *ripe* and palatable, in an *honest package*, they must not throw too many stones.

I know that grapes have been offered for sale that the growers themselves would not eat.

In some instances the fruit was rushed to market in the very hot weather of last September. The returns were 5c or less, when by waiting for cooler weather, two or three cents more per basket could have been realized.

Rumor has it, that two cars of green fruit were shipped to Boston by some parties West of us. The fruit was condemned and returned; the shippers having to pay transportation charges both ways.

The Concord and Worden are still the leading varieties for black, the Niagara for white, Catawba and Delaware for red.

The Green Mountain is the finest early white grape for the table, this followed with Moore's Diamond and Niagara will furnish a supply of white varieties throughout the season.

There were in our District, 7 Horticultural Societies two years ago. A letter was sent to the Secretary of each Society, asking for a report of the work done during the year.

Five answers have been received; viz: from the Eastern Cuyahoga, Lorain County, Geauga County and the Geneva Society.

The Eastern Cuyahoga and Lake County Societies meet monthly, Lorain County Society quarterly. The Secretary of the Geauga County Society, writes that their Society was killed by the change from quarterly to monthly meetings.

The Secretary of the Geneva Society, writes that their Society is dead, never to rise again. In both of these cases I believe that if a little help could have been given for two or three meetings, by the State Society, it would have tided them over their weak places until they were able to go alone.

It seems necessary to have a closer connection in some way between the State Society and the local Societies.

As a whole, briers and vines seem to be in fair condition, and if the winter is favorable a good crop may be expected.

AD INTERIM REPORT FOR THE EIGHTH DISTRICT

By H. H. Aultfather.

On every side, we notice that the *prosperity* so much talked of during the past year, has reached the farmer, and the click of his mower and binder, and the busy hum of the thresher has been somewhat livelier than for several seasons.

The early sales made of his stock and grain have made him happy, and to-day he is the busiest man in the land. He has no time to talk politics now. He has had his rest. His fields have been plowed earlier and put in better conditions for the seed than ever before. Now he is hustling the work, all because he sees better times in the future. The large flocks of sheep, and herds of cattle which had almost diminished from 16 to 1, will by his care, soon be increased to their former size. It has been very easy to note those who in the times of the depression, stuck to their business, as they are reaping their reward from the start. But while the long looked for prosperity has not struck the fruit growers in the same degree, we believe the prospect to be much better than one year ago. But, nevertheless, many farmers who had changed their occupation to that of fruit growing, have thought different and the scythes and the mowing-machines have been making a lively racket on their farms, clipping off the plantations of raspberries and blackberries to be replaced by crops, that have brought as good returns with much less expense and labor.

Excepting in locations where a light crop was produced in '96, apples were generally a poor crop, and in many places much worse in quality. At present they are selling at .75 to $1.25 per bushel, according to quality. The blight which made its appearance in the apple orchards about June 5, seems to have been general throughout the district, and in some sections it was thought to be worse than ever before. The fine crops of fruit last season alike on both sprayed and unsprayed trees, caused many to neglect the work of spraying until too late and but little was done. There was a fair crop of cherries, mostly of the sour varieties. The Early Richmond bore the largest and most perfect crop of any variety. This being the third crop during the last four years, the prospects are that a large number of trees will be planted in the spring of '98.

The borers have damaged many trees during the last summer. The plum crop was generally left to the curculio who did their work well, leaving but few for the growers. The trees are healthy and full of buds, and considering the conditions a few years ago, are reasonably free from Black Knot.

The pear crop was practically a failure throughout the district, excepting Summit and Ashland counties there was a half crop which were mostly of good quality and sold at seventy-five cents to $1.50 per bushel.

Quinces were a half crop and sold at $1 00 per bushel.

All prospects for a peach crop was destroyed by the cold wave of January 25, the mercury registering at 16° and 18° below zero on the highest points. The curl leaf made its appearance during the cold, damp weather of May, and continued until the 1st of July, killing about all the new growth made on some varieties up to that time. But throughout the months of July and August, the conditions were favorable for the growth of wood, and that of September and October for the ripening of the wood and maturing the fruit buds, and to-day, the apple and peach trees are in much better condition to bear a crop in '98, than was expected some time ago.

In one orchard of my own, consisting of over 300 trees of several varieties, the Elberta showed the greatest damage by the curl leaf. In the same orchard, two rows were cut back fully three-fourths of last years growth, and two rows about one-half and two rows not over one-fourth was taken off, while there was two rows not pruned at all. The damage by the curl leaf seemed to be in proportion to the pruning done. It being the worst where the trees were pruned most severely, while those not pruned were least affected; but at this time the trees that were pruned most severely, with the exception that fruit buds are not so abundant, appear to be in better shape to produce a crop in '98 than those not pruned at all. Another experiment tried in the same orchard, was that several trees were pruned after being in full leaf, and no injury could be detected by it. The cold, damp weather in May, and the late season in ripening, was very favorable for the growth of the strawberry, both in fruit and foliage, and although there was not the number of acres in large plantation there was the year before, there was a greater number of small ones, and the size of the berries averaged much larger than in the previous season, so that the yield fell but little short of that in '96. But while the average size of the berries rule larger, some varieties were soft on account of the very heavy foliage, that with too many incompetent salesmen to compete with caused prices to rule a shade lower than those of the previous season. On account of the berries being too soft to ship well, the best prices received, were in favor of those who could find a home market and save the extra expense of shipping.

At present, the strawberry plants that were set early, are very large and thrifty, and in the best of condition to bear a crop of very large berries. But on account of the ravages of the grub worm during the severe drouth which lasted from the 10th of August until the 1st of November, but few plants took root, and now, many plantations present a very checkered appearance, and although the acreage planted remains about the same, the prospects are not flattering for over one-half a crop in '98. The present indications are that the number of acres planted to strawberries next season will be largely increased.

Of the newer varieties fruited in '97, the Bisel Brandy-wine, Wm. Belt and Brunette, gave very satisfactory yield and are finding a place near the head of the list. The Staples is a fine staminate variety to plant with the Warfield. It is of fine quality, and the yield, size, and color about the same. Too many new varieties that have not been properly tested, and should never have been placed upon the market, have been introduced and placed upon the list which now is entirely too long for the average grower to choose from, and I do not care to mention any variety that I do not consider as good, or better than those we have tested.

For years it has been the aim of the grower to propagate a variety that would grow berries as large as the Sharpless, and be as productive as the Crescent, with the hardiness of the latter. We think that point has been so nearly reached, that it is time there was some better method adopted in the way of testing, selecting, and naming of new varieties before being introduced; and we venture to say if this work was left entirely to the Horticultural Department of the Experiment Station, of the different States, and to begin with they would select not over thirty of the best varieties now in use for our present list, then for every new variety recommended to be introduced, discard one of the poorest. By this method, the number of varieties on the list would not be increased. Then we would suggest that all new varieties before being placed on the market, should be tested at the Stations for at least two seasons, with the understanding that no variety would be recommended for introduction unless it was as good, or better, than one of the six best on the list, and also that a name be given that would designate whether it was a pistillate or staminate variety, by adopting some method of this kind we would save a great amount of time, labor, and money invested in so many worthless varieties that have been lauded so highly by the voice and pen of only the originator and introducer.

The number of bushels of blackberries and black-cap raspberries, was not as large as the previous season; bnt where the plantations were well worked and had received the proper care, the yield per acre was large, and the berries fine. But many acres received but little care, except that of taking out the old wood. In some sections the weather was dry at the time of ripening, and the crop was badly injured. But those localities favored with frequent showers at that time, caused them to give a fair yield and the crop netted the growers better net returns than last year. The yield of red raspberries was large, and in good demand at prices ranging from $1.75 to $3.50 per bushel.

While it was not expected that the fruit crop would equal that of '96, surely that of the apple might have been much greater, for in many orchards there was an abundance of bloom which set sufficient fruit to produce a fair crop, and there is no doubt, had the growers attended to the spraying of the trees for the codling moth at the proper time, their crops would have been much greater and more free of worms, and at present prices, they would have been well paid for their labor.

The number of acres planted to potatoes was much less than the preceding year. The dry weather in June, and the work of the Colorado Beetle, which was very numerous, caused a small yield in some sections, and there was not over one-half crop which sold early in the season at seventy-five cents, and later at fifty cents per bushel.

The District Horticultural Meeting held at Millersburg, Ohio, the 3d of March, was well advertised throughout the District, and a very interesting program was rendered; but the Meeting was anything but a success in the way of an audience; probably caused by the very wet weather at that time, and a very interesting trial which was in progress in court and lasted the entire meeting. Great credit is due Mr. T. T. Finney, and a few others at a distance from town, for the work done and interest manifested to make the Meeting a success.

There are three County Horticultural Societies, and two Farmers' Clubs in this District, which are in prosperous condition and hold regular monthly meetings; although the number of paying members have decreased somewhat the last year, the people are generally becoming alive to the fact that the great pest, San Jose Scale is abroad in the land, and work must be done to keep it in bounds, and many persons are becoming interested in this branch of Horticulture that never before paid much attention to it, and we think the prospect good for quite an increase in our local societies the next year. There has been no new societies organized during the year, but a few days ago I learned that the people of Ashland County want one; also, that one could be organized to an advantage in Coshocton County, and they would like to see the effort made.

Prof. Webster has located the San Jose Scale in this District, and marked it near the northern line of Stark County. You may be assured that every thing is being done to keep it from being spread to other orchards.

While the destruction of a few orchards in the state is bad enough, would it not be well for our friends in the towns and cities to organize to protect their fruit, shade and ornamental trees and shrubs from the depredation of this scale? As the danger of its spreading would be many times as great as in the country, and while the cutting down of an orchard or two would be scarcely missed except by the owners, their value to the county or state would be nothing as compared to the destruction of the beautiful trees and shrubbery that adorn the lawns, streets and parks of our cities.

There are four Farmers' Clubs and four Vegetable Growers' Associations in Wayne County, all of which are well attended, and are all wide-awake, up-to-date societies—Still I find that a Horticultural Society is desired by some.—This county harvested, last season, about 200,000 bushels of onions, and is noted for the Pickle Industry which is established here; 1,000 acres which was planted to the cucumber for that purpose. There are also thousands of tons of cabbage and celery produced in the county. The tobacco is being grown in considerable quantities at a profit.

The President: This closes the report of ad interim committeemen so far as they are present, but we have some miscellaneous business to bring up at this time. We will now listen to the report of the committee on President's Address.

REPORT OF THE COMMITTEE ON PRESIDENT'S ADDRESS.

Your Committee beg leave to submit the following:

We endorse the suggestion of the President that a Librarian be appointed, and that the chair do so appoint subject to confirmation by the Executive Committee.

We heartily approve the action of the Executive Committee in appointing a Legislative Committee.

We also recommend the continuance of the district meetings whenever the conditions of our finances will justify.

W. W. Farnsworth.
W. J. Green.
Wm. Miller.

On motion report of above committee was adopted.

The President: We will now listen to the report of the committee on Final Resolutions:

Resolved, That this society feels that the officers and professors of the Ohio Experiment Station, in furnishing beautiful weather, fine music and nice audiences, has acquitted itself nobly and made the annual meeting of 1897 a model one in every sense of the word. The cordial thanks of every visiting member are due the people of the Experiment Station and friends in Wooster for the successful meeting. Signed, L. B. Pierce, Committeeman.

Resolution was adopted.

Mr. Aultfather: There is a little misunderstanding on the part of many of the members, and if it is not out of place I would like to bring it before you.

The President: It will be in order at this time.

Mr. Aultfather: After it was arranged to have the four district meetings through the state, I believe it was understood that we did away with the paying of a delegate from the county societies, and I believe that the matter ought to be definitely settled at this time.

The Secretary: I think the general understanding was, as Mr. Aultfather says, that this was to be discontinued in the view of the district meetings, but as no definite action was taken in the matter, we have had to go in accordance with the old regulations, and if Mr. Aultfather wishes to introduce a resolution of that kind to test the feeling of the society it would be very proper.

The President: I think it would certainly be advisable for the society to take some action. I have refused to endorse the expenses of one or two delegates, because I thought there was no authority for it.

Mr. Aultfather: In order to settle the matter, I move that they be dispensed with.

The Secretary: The meaning of that is all right, but I would put it that this society discontinue the payment of expenses of delegates, and in that form I will second Mr. Aultfather's motion.

Motion carried unanimously without discussion.

The President: This completes our regular program for this morning, and if you now desire we will take up some of the remaining questions.

Question: Can tomatoes be grown at five dollars per ton?

Mr. Baum, of Creston: I have had some experience in the growing of tomatoes for our canning factory at Creston, and taking the work of Jack Frost into consideration in the early spring, and my experience the past season with the potato bug killing and eating them so, we are compelled to replant the second time, and then again Jack Frost catching the tomatoes in the fall before they ripened, they cannot be grown at five dollars a ton. I am quite certain that our factory would be glad to contract at $6.50 per ton. When you take the pests into consideration and the work necessary to grow a crop of tomatoes, $5 per ton is not proper compensation for the farmer. There are many farmers that belong to our organization, The Creston Farmers' Vegetable Growers' Association, that go from four to six miles with their loads. I want to warn our friends in Wooster, to be careful what contracts they make, unless you want to "pay dearly for the whistle" at the end of the year. You have a canning factory, and they ought to pay you enough so you will have a fair price for your work.

Mr. Woodard: I would like to ask the gentleman for what tomatoes can be grown profitably.

Mr. Baum: They can be grown for $6.50 per ton. That is a fair compensation compared with the prices of other farm products, but at less than that, you will find yourself badly beaten. That is my honest belief.

The President: Don't you think you could afford to grow tomatoes at that price much more profitably than the sugar beet at four dollars per ton?

Mr. Baum: I have never grown the sugar beet, and I do not know.

Question: What is an average crop of tomatoes?

Mr. Baum: I have left my statistics at home, and I cannot give you the figures.

Mr. Sweet: Do you prune the vines any?

Mr. Baum: No sir, we do not prune the vines at all. If you prune the vines you will find yourself badly beaten at $6.50. We set the rows five feet apart and the vines three feet in the row, and run right through with the horses and cultivator, and if you get brother Livingston's seed, you will get tomatoes.

Mr. Wise: There is a great deal of difference in growing tomatoes. The hard point is in the planting. If you expect to have five or six hundred bushels of green tomatoes, you are not going to make much money. My experience is that we should have our tomatoes out of the road when the frost comes. If you have the proper kind of plants and they have been properly transplanted, if they have lots of fibrous roots, there is no trick in raising five or six or seven hundred bushels to the acre. I believe the price is about 15 cents per bushel.

The President: What is the weight of a bushel?

Mr. Baum: Fifty pounds.

Mr. Wise: I would like to sell fifty pounds for a bushel. A good solid bushel will weigh sixty pounds. If you take the baskets they will not weigh quite so much.

The President: Lots of our Cleveland fellows don't get five cents a basket during the season.

Mr. Wise: Yes, but what do they get in the early part of the season?

Professor Selby: The growers in the vicinity of Cincinnati count 300 bushels per acre a fair crop of tomatoes.

The President: Professor Selby has a report to make which we ought to have before we close this meeting.

Professor Selby: This report is on behalf of the committee on the motion of Professor Green, and I think it is not advisable to go into an explanation more than to say, that there was a committee appointed by the Missouri State Horticultural Society, that is at work gathering together information in the way of questions and answers to teach the elements of horticulture and advocate its introduction into school work. This is the committee's report:

We, the committee to which was referred the communications of the committee, the Missouri State Horticultural Society, on horticultural education, recommend that this society endorse these undertakings of our sister society, and that we pledge our earnest efforts and support to the introduction of nature studies into our rural districts.

Signed, A. D. SELBY.
A. SHIRER.
G. N. CARRUTHERS.

Question: Can strawberries be grown for a near canning factory at four cents per quart in bulk?

The President: Mr. Crawford, we would like to hear what you have to say upon the question.

Mr. Crawford: Mr. President, while I do not believe that anyone will make a large amount, of growing strawberries at that price, I still believe that it is perfectly safe to undertake it if a man is at all posted. I do not think a beginner would be safe in setting out strawberries and contracting to grow them at four cents a quart; but I am satisfied that a well experienced strawberry grower that is favorably situated, might undertake it with prospects of making a reasonable profit.

The Secretary: I think Mr. Crawford has covered the ground pretty fully. I like to know pretty nearly what these things cost me. When I was in the farming business, I kept a book account of every crop we sowed, and I could tell pretty closely, almost exactly what each bushel of corn cost, and the same with wheat. You cannot do that in my business now, but I can make a pretty close estimate, and my estimate is that a quart of strawberries on the vines ready to pick will cost me two cents. Of course it will vary, but that is an approximate estimate. Of course the cost of picking will depend somewhat upon locality. I do not know how carefully a canning factory would want them picked, but I would be glad to contract to grow a thousand bushels of strawberries at four cents a quart, and the buyer to furnish the package. Now, in my business I buy $500 worth of crates in a year, and while we do not pay anything for express, yet our commission and crates would be quite an item which would be dispensed with by this means. Now, there is a difference in the soil. The soil on which I operate is pretty well adapted to grow a good article at a reasonable price, but not a fancy berry. My soil is not heavy enough to grow a fancy berry to the best advantage, but I can grow the Lovett and the Crescent to perfection at reasonable prices.

Mr. Aultfather: I would like to ask Mr. Farnsworth if he contracted to grow berries at four cents a quart, if he would not want the right to choose the variety?

Mr. Farnsworth: Oh, yes, I would not attempt to grow the Marshall or any of those fancy varieties. That should have been specified. I would not undertake to grow a fancy berry, but a good commercial berry. That is a very important point.

Mr. Baum: The manager of our canning factory said to me, "We will give you a starter in an order for a thousand bushels," and I asked him why he expected us to grow good strawberries for four cents a quart? He says the reasons are these: Out in Missouri and other parts of our country, they will load train loads of strawberries and ship them into Pittsburg market and glut the market, and then their agents go out just at the right time, when the market is glutted, and offer these car-loads of strawberries that have been shipped in, and they step in and buy our berries at two and one-half or three cents a quart by the car-load. The grower pays the freight, the commission man gets his money and there is nothing left for the grower.

Now, why not organize this horticultural society and the growers of small fruits of the state and have a centre in the state, and have communication through the different members of the state by telephone or wire, and if I have a car-load of berries to put upon the market, you as a central head know where that car-load can go, and telegraph me to send it there and not send it on a glutted market. Some system of this kind ought to be adopted by this organization or the growers of small fruits, and in that way we do not have to take four cents for our strawberries.

Mr. Crawford: I think Mr. Aultfather has been working in this line, and can tell us more about it than anybody else, and I would like to hear from him.

Mr. Aultfather: I was thinking that when the canning factories take advantage of the growers, that sometimes the growers get advantage of the canning factories. Last season a year ago, we had quite a crop of raspberries. I understand that the growers at Barnesville, telegraphed up to the canning factory at Pittsburg, to know if they would give them six cents a quart, on board the cars at Barnesville, for a thousand bushels, and I understand that they went up and down the streets to find how the berries were, and telegraphed back that they would give them six cents a quart, delivered, and they took them up, and delivered 300 bushels, say to day, and 300 more to-morrow, and 300 more the next day, and before the first consignment got into Pittsburg, the berries were selling at four cents a quart. We ship our berries right to commission men, and I would prefer to ship and sell that way all the time, but I want to know my commission man and I want him to know that I grade my berries, and then he can and will sell them better. But when you ship them right in and the commission man has a chance to sell them in one place, he will do so. Now, in regard to raspberries and blackberries, we did better in the market in Pittsburg than we did at home. When we were selling at 65 cents at Minerva, we were getting $1.25 per bushel in Pittsburg.

The President: How about this question of shipping under a central management?

Mr. Aultfather: We have not done that. I have not got acquainted with them.

Mr. Crawford: You and your neighbors have been selling berries on that plan.

Mr. Aultfather: No sir, when my neighbors put berries on the market, and I can afford to buy them and can make a profit on them, I do so at once.

The President: Most anybody will do that.

Mr. Baum: I wish to correct one impression that my conversation may have left when I said the farmers should take this into consideration. Our canning factories are our best friends, and by coming together and talking over these matters, and looking at them in the proper light, we can get good pay for our goods and at the same time they can make a profit. We want to work together and not injure the canning factories. It is the best Industry we ever had strike Creston.

The Secretary: There is one item in connection with the contracts of the canning factories that strikes me forcibly, although I am not acquainted with the methods of canning. There is a constant supply of berries, and a thousand bushels distributed through the season, would be worth far more to the factory than a car-load that had been picked and shipped into the market in one or two days. They could handle a thousand bushels more economically, and put them up in far better condition if they received fresh fruit and in small quantities, and could better afford to pay four cents for that kind of berries, than two cents for the others.

Another thing; I would rather contract to grow strawberries and deliver to a near-by canning factory, than take my chances on growing potatoes or sugar beets or vegetables of any kind.

Mr. Wise: There are other things to consider in growing strawberries. You may have a crop this year that will pay you four cents a quart, but the question with me is, can I grow them at four cents a quart for the average crop? I do not believe they can be raised for four cents for the average crop. There are a great many things to take into consideration in growing strawberries. I cannot get berries picked properly in full quart baskets, for less than one and one-half cents in an ordinary, decent quart. If you take the land into consideration, and take the full crop of the state, you will find that at four cents, the grower will not have very much left. In my small way of growing, I have kept an account of my sales for twenty years. The largest crop of strawberries I ever picked was 165 bushels on half or three-quarters of an acre, but I don't think the average would be over 150 bushels to the acre. I do not think it would go much over 100.

Mr. Baum: How are we to deliver our strawberries at the factory, in quart baskets, bushel baskets, or in bulk? How do these factories receive them?

Professor Green: I made some inquiries as to how they expected to take them in, and in regard to the condition. They said that they were not particular whether the hulls were on or not; they didn't care, if they were taken off. That is, they can be a great deal more careless than if picking for the ordinary market, and instead of paying one and one-half cents for picking, you could get it done for a cent.

Mr. Wise: You talk about a cent a quart, or is that a basket?

The Secretary: A quart basket, an honest dry quart.

Mr. Wise: Where do you get yours?

The Secretary: We get ours from Indiana. (Laughter.)

Mr. Wise: Where do you get your honest quart? I don't sell a quart.

The Secretary: I sell an honest quart, and our berries as I send them into the market, are full quarts. I test every new style of basket before buying my year's supply.

Mr. Aultfather: If it is not consuming too much time, I would like to ask that this Experiment Station try the matter of selling, and report to us. We have all learned how to grow strawberries, but I would like to find out the best way of disposing of them. I am going to try a different method of getting rid of my strawberries that have not ready sale in the market, and also raspberries and blackberries. I believe if I can succeed in canning that juice, I can sell all that I can get, unfermented. I think I can find a good sale for it. Why don't you can your berries for sale? I have had a good many inquiries of that kind; and I believe if we would press the juice out of the poor quality of berries and then put it upon the market, that it would sell very well.

The Secretary: In carrying out Mr. Aultfather's idea, I suggest that Professor Green make the experiment, and ship down to Mr. Aultfather's market, and see how he comes out. (Laughter.)

Mr. Wise: You want to be careful if that is a local option township. (Laughter.)

And thereupon on motion the convention adjourned *sine die.*

FORCING CUCUMBERS.

By F. E. Carr.

I wish to state in the beginning that I do not consider myself an authority on cucumber growing under glass, but I have had a little experience in a small way, and if the conclusions I have arrived at prove to be of any benefit to beginners, I shall be glad that I had the opportunity to present this paper to you.

So far as my knowledge and experience goes, I should grow only the Telegraph cucumber in mid-winter, and in order to have success during this season of the year, it is necessary to have strong plants in four-inch pots by the first of November.

Have them planted on the bench and ready to go ahead by November 10, so as to secure a strong growth and have them in blossom before the dull, short days arrive.

Keep the temperature at sixty or seventy degrees at night, and if the sun runs the temperature up to eighty or ninety degrees during bright days, it will do no harm. Spray the vines all over on bright days to prevent the Red Spider getting a start; keep a humid atmosphere, and use care in ventilating, as a cold draft will induce mildew on the foliage; a long spell of dull weather will also induce mildew A little sulphur rubbed on the hot pipes is our remedy for this trouble.

We prefer open benches and bottom heat for the Telegraph cucumber. Cover the bottom of the bench with inverted sods, and then fill in four inches of good soil to start with.

When the plants begin to bear, a little fresh soil can be added from time to time to keep them growing freely. Liquid manure can also be used if needed, but it should be weak. We always train the vines up on strings or wires, and keep the tips pinched of, so as to get a bunch of blossoms at each joint. It is also well to pinch the tips back if the vines grow rapidly, in order to get short joints and a bushy growth.

If the ends of the cucumbers touch the soil on the bench, a bit of glass or a chip must be placed under them, or there will be danger of their rotting.

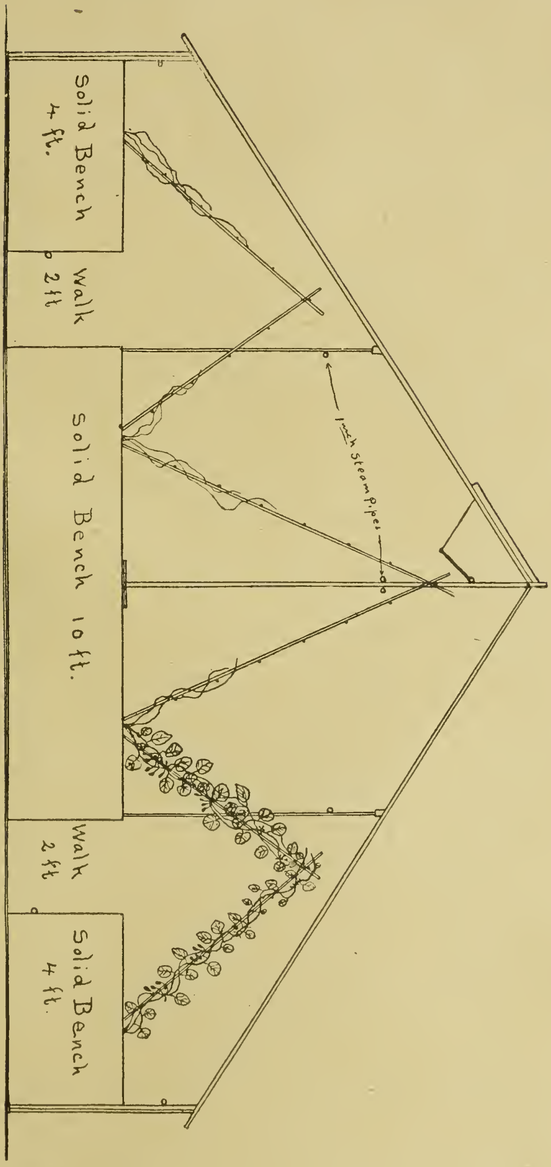
In varieties we prefer Duchess of Edinburg and Progress; we shall also grow Rochfords Market this season. It took first prize at the exhibit of the Pennsylvania Horticultural Society this fall.

These are all slim sorts, not inclined to have a bulge at one end. Duke of Edinburg especially shows a fine blue bloom, and some spines, which makes a fine appearance in market, though all of those mentioned have the bloom and spines to some extent. These varieties, handled as described, can be had in bearing all winter, and until the garden cucumbers come from outside, or even longer if desired.

The quality is better than the outdoor sorts, and there are very few seeds. What few seeds they do bear are usually not fertile, although we have raised a few good plants from our own seed. But most of the seed used comes from England.

The White Spine cucumber is the one usually grown under glass for market, and these generally, as the last crop in the spring, following lettuce, but they may be had much earlier if desired, and of course the earlier ones bring the best prices.

The finest crop of White Spine that I ever saw was grown at Arlington, Mass., in a house fifty by four hundred feet. They were planted in the natural soil, no benches being used. They had strong plants, just beginning to run, and planted them February 10. March 17, when I saw them, the vines had covered the trellises, and were loaded with bloom and all sizes of cucumbers, while the first setting near the ground had already been picked and marketed. These vines were trained on sloping trellises, same as shown in cut.


Solid Bench
4 ft.
Walk
2 ft
Solid Bench 10 ft.
1 inch steampipes
Walk
2 ft
Solid Bench
4 ft.

We have always allowed ours to run over the surface of the bench, same as in garden culture, but this year we shall adopt the trellis plan.

The cut is drawn on a scale of ¼ inch to a foot, and shows the width and height of house we shall use for White Spine this season.

The sticks used for the trellises are six and eight feet long, and should be about eight feet apart, wires stretched the whole length of the house and fastened to the sticks with small staples, quickly put in place and quickly removed.

The plants on the side bench will be trained only one way, and four feet apart will be close enough. Those planted on the middle bench will be trained both ways, and three feet apart will be about right.

This mode of training exposes the foliage to the light, and keeps it near the glass; it also gives the bees all the opportunity possible for fertilizing every blossom.

In addition, every cucumber is exposed to view, and can be picked at the proper time.

A board should be laid through the middle of the center bench to walk upon, and so avoid packing the soil.

When bright, warm days come in March, we think it best to use a little shade on the glass to prevent scorching of the foliage. We use whitewash on the outside of the glass, and make it heavier as the sunshine gets brighter toward spring. Our seed will be planted in three-inch pots, about December 15. The pots will be plunged in sand on the cutting bench, where we can give bottom heat.

They will be planted on the bench as soon as they begin to run, which will be about the 1st or 10th of February, and we shall hope to have cucumbers from the 15th of March until we get them from the open garden. The cucumber is a tropical plant, and wants a warm, moist atmosphere, with no sudden changes, consequently the main points to look out for are an even temperature of about 70 degrees (except when the sun runs it up during bright days), care in ventilating to prevent mildew as far as possible, and spraying all over in bright weather to keep the Red Spiders down. Where only a few vines are grown for home use, fertilize the blossoms with a brush, or a blossom picked off to use as a brush, we prefer the latter.

If as many as even a small house are grown, always use bees for fertilizing, the bees do not cost much, and they always attend to it just at the proper time, and do it well. The hive may be set on the bench inside the house, or it may be set against the house on the outside, and a small opening made to allow the bees to get into the house, but do not allow them to get out of doors and get chilled. Tack fly screening over the ventilator openings to prevent it.

AD INTERIM REPORTS.

REPORT FROM THE NINTH DISTRICT.

By S. R. Moore.

Mr. President, Ladies, and Gentlemen of the Horticultural Society:—

As the representative of the 9th district composed of the twelve counties: Muskingum, Guernsey, Belmont, Perry, Morgan, Noble, Monroe, Hocking, Vinton, Athens, Meigs and Washington; I confess that none of them did I visit outside of our own, Muskingum; but from hearsay only, my report is, that about the same conditions exist as in Muskingum. Commencing with the first of the season, some little difficulty in the beginning was had with early planted vegetables, seed being tardy to germinate, such as corn more particularly; as the season advanced the troubles lessened. Taking it all in all the vegetables made a good showing, except potatoes; as to prices, and remuneration to the grower I cannot say, for we do not grow any except for home use. However, some of the growers appear to be satisfied with the results.

Commencing with Strawberries, the crop was one of the largest ever gathered; and many of the growers sold their fruit for less than the cost of production. Following the list of the fruits through the season in the order of ripening. Raspberries were a fair crop, and the supply was about equal to the demand. Blackberries promised well until about the time of ripening, when an extra hot time occurred and the fruit wilted, and the leaves curled and almost dried up, but with rain and cooler weather, later in the season some fair fruit was gathered, but not as large and fine as if the season had been more desirable. Currants and Gooseberries where cared for, did fairly well, and brought a fair price in our Zanesville market. Cherries were only a partial crop, and of good quality, free from insects or disease, Peaches and Pears nearly a total failure, suffered from being winter killed. Quinces only a few, with the usual amount of twig blight, which has been so prevalent for several years past. Grapes are so little grown that it seems almost useless to name them, but our market is so well supplied from Northern Ohio and New York, and so cheap and good, that it would be useless to spend much time or energy in trying to raise them.

Apples were in some orchards a fair crop, especially at our own place, as a rule free from scab and worms, and without spraying. The varieties best this season were the Northern Spy, Stark, Hubardstons, N. Such, Baldwin, Evening Party, Sweet Rambo, Fallawater, Fameuse or Snow, in the winter class. Benoni, Early Joe, Fall Orange, Summer Pearmain, and Maidens Blush were among the best for Summer and Fall. Many others like Red Astrachen, Wealthy, Sum, Sweet, Tetofski, only bore a few, which in a measure we attribute to their heavy crop in 1896. Three trees of Hughs Va Crab at our place, yielded six barrels of cider, which was sold at a fair price, For the best all 'round apple, covering a period of ten years past with us, the Northern Spy stands at the head of the list, with Grimes Golden a close competitor. In some orchards that I visited in our county, I found Scab and other diseases, insects and defects of various kinds, which in my opinion, were due to neglect in cultivation and fertility, while our cultivation is not what it ought to be, our trees are not puny and weak, hence are better prepared to resist disease, etc. Drop apples to grocers brought 25 cents per bushel, through the entire season, up to picking time. Referring to the apple crop, I do not wish it to be construed that the entire section that I represent was anything like it would be in ordinary years, enough was produced in our county to supply the demand, or nearly so until within a few weeks past; from the growers who had fruit, they being so imperfect, a large portion of them was made into cider, and what was left at gathering time nearly all rotted. I have placed the Spy at the head of the list at our own grounds, it may not be so good for many others, especially covering the entire district. Grimes Golden would most likely get the popular vote for the best all 'round apple for winter use, while our Rome Beauty is a good one for the average market, and when consumers are not so particular about quality. Plums were scarce, some were sold at $2.60 per bushel, not many, mostly home-grown Damsons.

Considerable more attention is given to the making of lawns, about the suburbs of the city and villages, extending to some more thrifty and tasty farmers. Flower beds, such as Tulips. Hyacinths, Geraniums and foliage plants are being popularized by our thrifty growth of suburban residences and amateurs, as well as the regular florist.

Cemeteries and Parks are not so well cared for, and kept up to the order of improvements as they should be, for the reason that designing politicians are often placed in power without any knowledge of the beauties of nature, or even without knowing the difference between common Jimpson and the beautiful Canna. The Ohio weed law was in some instances lived up to, but in others openly violated. Our mayor of Zanesville, together with his attorney, informed me that within the city limits only Canada thistle was within reach of the present law, such was the construction. We have no Canada thistle within the city limits, and basing the construction as given me by our chief magistrate, there was no other remedy, except by moral suasion to destroy other noxious weeds within the city limits.

The dry weather through September and October shortened the time of planting of trees, as many preferred to wait for rain: when rain came the wheat fields were made to rejoice, as well as the tree planters, and now the luxuriant growth of beautiful green wheat, bids fair for a bountiful harvest in 1898. Strawberry patches are not as a rule in first class condition, and the growth cut short the plant making, the same with strong fruiting plants, so that next season's crop does not bid fair to be a large one. The fruit bearing trees I believe are in a fair condition to withstand the cold, and bid fair for a full crop in 1898.

The exhibit of Horticultural products at our county fair, in vegetables was as good or better than in former years, except in potatoes; in fruits not so good, yet for an off year was not bad.

Beg pardon, if I digress and get away from my district, and get outside of the boundaries of the great state of Ohio, noted for presidents, generals, statesmen, agriculturists and horticulturists. Taking advantage of reduced railroad rates, to the city of Buffalo, in the great state of New York, rates made low by special agreement between the Traffic Association and the G. A. R., the great ex-soldier organization, the greatest the world ever knew, August 22 brings us to the great city of Buffalo, losing no time, we soon find ourselves at Niagara Falls, taking in the magnificent wonder, soon we leave on trolly car for Wellston, crossing the Niagara river, by ferry, lands us in Queenstown, Canada. Looking over the old fortification on a high hill near by the village of Queenstown, commanding the river and village, and the level plateau of country, my curiosity was not satisfied, for at a distance of about one mile I observed an orchard and vineyard, and at once I sought the proprietor, Mr. E. Wynn, who kindly and courteously showed me through his peach orchard—plums, grapes, pears and blackberries, all laden with fruit. Pickers were then gathering the last picking of blackberries, elegant, shiny fruit. His plum orchard, largely Lombards, was an interesting sight to me. laden with unripe fruit, peaches and pears the same. Grapes mostly Concords and Niagaras. Spending as much of my time as could be spared studying the different kinds of plums, etc., we regretted to leave, but the impression and lesson learned was not soon to be forgotten. Among his plums he had the Red Egg, Blue Egg, Yellow Egg, Washington, Niagara, Lombard and others. The mystery with me is, why can't we in our section of Ohio raise such fine fruit, is it because we do not plant in quantity, hardly, because I saw trees at the city of Niagara Falls, Tonawanda, at Rochester, and at other places standing alone, isolated, and full of elegant fruit. Our soil appears to be as fertile as theirs, our climate not so cold, but something seems to be lacking, what it is I am unable to say, I mention this that in some way not yet known to us, in the hills of southeastern Ohio we may get further light. Next we find ourselves in Rochester, N. Y., and soon we are at the Pioneer Nursery firm of Elwanger & Barry. Mr. Barry took us through their elegant grounds and specimen orchards. Here were plums and pears of many kinds, some ripe, others ripening. Then came the same perplexing question, why can't we grow plums? After helping ourselves to the fullest extent of our ability of that delicious lot of plums, running on schedule time we pass along, halt at Bowman & Sons, next to Mr. Allen L. Woods, whose place was well supplied with plums, and bringing our grip into requisition we were loaded down both inside and out. Mr. Wood kindly and courteously drove us around the city, making occasional stops.

As I have already said, we were running on schedule time, next finds us at Buffalo, just in time to participate in the great parade, with bands of music, flags and decorations, men in uniform, enthusiasm and cheers on every hand; as this has no bearing on Horticulture, I leave you to draw your own conclusions. There are some other things I noticed, especially between Rochester and Buffalo, that the crop of Canada thistles and wild mustard had a good hold on very many farms.

AD INTERIM REPORT.

C. H. WAID, FULTON CO., DISTRICT NO

Mr. President, Members of the State Horticultural Society:

My report this year will be brief. For it is much easier to write of our successes, and those we observe, than of failures. And we are sure that among fruit growers of northwestern Ohio, there were more of the latter than of successes by a large majority. I do not think there has been a peach ripened in Fulton county. Very few plums, and not apples enough to supply one-fourth of the hungry children of the county.

With berry fruit it was quite the reverse. Long before the home fruit began to ripen, strawberries were retailing in our local markets at ten cents, and even eight cents per quart. Cool weather prevailing at the time held our berries back, and kept the imported stock in fine condition. Following this, came hot, moist weather, which ripened our berries rapidly, and many went onto the market in a soft condition, and customers said, "Why can't you grow solid berries as they do farther south?"

So great was the rush while the hot, damp weather lasted that commission men sent out warning, "Do not ship, they will not pay expense of transportation and package." I thought others would heed the advice and leave an open market for my fruit—so continued to pick and ship; but when the returns came in, I concluded that the other fellow had figured as I had. If brother Albaugh, or some other enterprising nursery-man, had sent an agent to our section about this time with a variety of strawberries fully warranted to bear but very little fruit, he would have found a number of takers among our growers. There was grown in two townships of Fulton county not far from 3,500 bushels of strawberries, which sold on an average of $1.00 per bushel. Raspberries followed with a crop on the same territory, of about 1,800 bushels, and sold at an average price of about $1.50 per bushel. Blackberries, 1,000 bushels, price $1.25 per bushel.

With the good times in sight a little later, which saw the farmer hauling to market his ninety-seven cent wheat and seventy-five cent potatoes, while the berry grower was struggling with his old canes and weeds, preparing for a crop ten months hence, he was a righteous man indeed if he did not break the commandment which sayeth "Covet not."

In varieties, the Lovett strawberry is gaining in favor each year, and many cling to the Crescent as the main standby.

In raspberries, Eureka has no superior for its season. A patch on Mr. Farnsworth's place, which yielded fifty-seven bushels per acre when one year old in '96, gave one hundred bushels in '97.

King seems to be our earliest red, and promises to be a great acquisition. Louden bore heavily and promises to be an improvement on Cuthbert, in hardiness and productiveness. Lotta and Conrath are also doing well.

Currants bore well and brought a fair price. Victoria and Red Dutch are the favorites.

Cherries were scarce and sold well. The few who had plums to sell, found no trouble in realizing $3 per bushel for Niagara, Bradshaw and Union Purple, and $2 for Lombard.

The Worden grape seems to thrive on our sandy soil, and sold readily in a small way at fifteen cents per nine pound basket. For early home use and near-by market, I do not think it has a superior. Ulster's Prolific proves an excellent variety for late home use, but is inclined to grow too little wood and too much fruit, and needs high culture, close pruning and thinning.

In apples, the sprayed orchards were far in the lead. Baldwin, Morris Red, Greening, Grimes and Jonathan are favorite varieties.

Farmers seem slow to avail themselves of the benefits of spraying, owing, no doubt, to lack of efficient machinery with which to do the work. We would suggest that half a dozen neighbors unite in buying a half-round tank such as threshers use and mount it with a double hose. Morril and Morley or some other good pump and have an outfit that will be cheap, efficient, rapid and durable, and will answer the purpose of all.

The severe winter of 1896-97 not only destroyed the buds of all peach and many plums, but was destructive to many trees as well. Three classes of trees were noticed to suffer most, namely, trees that had made too much growth, late in the season, trees that were starved and made too little growth, and those planted on low ground, where there was high ground adjacent. Cut worms were noted like the "snakes of Ireland," by there being none, but the potato beetle flourishes in spite of Paris green—Anthracnose lessened the yield of many raspberry fields, especially on low ground.

Altogether the season was not a flattering one for the fruit grower—but we believe the American people have the "confidence" so long promised, and if the consumer can manage to get a few more dollars before another fruit harvest, we will take our chances of getting our share of them

AD INTERIM REPORT FOR LAWRENCE COUNTY.

By E. G. Cox.

The spring of 1897 opened with good prospects for all kinds of fruit, except peaches, which were mostly winter killed. There was a very heavy bloom on everything, with the above exception, but the cold rains at blooming time and cool weather, with some heavy frosts, caused most of the tree fruits to drop, and what little was left was mostly destroyed by scab, codlin moth, and curculio. There was no spraying done in our county that I know of this year, and I believe there would have been a fair crop of apples if the trees had been thoroughly sprayed. The strawberry crop was the heaviest ever known, and prices received were the lowest. My own crop averaged $1.30 per bushel, which was much better than some growers received; some sold as low as seventy-five cents per bushel. The main varieties grown are Haverland, Bubach, Beder Wood, Warfield, and Lovett, and some still hang on to the Crescent. Of the newer varieties that I have tried, Barton's Eclipse, Enhance, Greenville and Cyclone can be depended upon. I am trying a few Marshall, Wm. Belt, Lady Thompson, Glen Mary, and a few others, but I don't believe they can be depended on for main crop.

The prospect for a strawberry crop next year is not very flattering. The dry weather of August, September and October prevented runners from rooting readily and some fields made scarcely any runners. Raspberries and blackberries were good, and brought paying prices. Some varieties of early apples bore a fair crop which sold for good prices. N. Spy, R. Russett, Baldwin and Prior's Red bore almost a full crop, but such varieties with us don't amount to anything as they drop off and rot early in the fall. Our old standby, the Rome Beauty, was almost an entire failure this year, and the Ben Davis was about the same. Ralls Jennett was the only winter variety that bore a full crop, and it usually bears when the Rome Beauty fails. The Stark is a good keeper, if picked early, and I believe it will be a profitable apple for southern Ohio. Wealthy is a very good early fall apple; bears young, but drops badly. York Imperial is a first rate winter apple. Pears were very scattering; no variety bore a full crop. Cherries were about 25 per cent. of a crop, mostly Early Richmond. Damson plums bore well and some trees of Lombard bore a full crop, while others did not. Pond's Seedling bore about half a crop. I have about sixty trees of Japan varieties, Abundance, Burbank and Willard, some of the Abundance have been planted five years, and all the rest three years. The Abundance have bloomed two or three years, and this year all three varieties were as white as snow with bloom, but I have never had a plum as big as a pea. They bloom the first warm spell in spring, and get killed by frosts. I have budded about forty of the three year old trees to other varieties, putting in from five to eight buds in the branches, about a foot from the body of the tree. I never intend to plant another Japan plum, unless it is a late bloomer and I don't know of any that blooms late. Beware of Japans for southern Ohio.

There is one orchard in Lawrence County, that bore a full crop of as fine peaches as any man ever saw—forty peaches made a half bushel. There were 400 bushels sold, which brought $800. The trees are eight or nine years old, have been well cared for and never bore any before. There are eight or ten of the old standard varieties, and they all bore well. The orchard is in the Ohio River bottom, and I suppose the fog kept the frost off. There is another orchard about three miles from the one spoken of, on a high hill about one-fourth of a mile from the river, but it did not bear this year, although it bore 2,000 bushels last year. There was no other orchard in our section that bore any peaches to amount to anything. The Crosby and Champion peaches are claimed to be frost proof, but in our county they winter kill almost as badly as others. If the buds would remain dormant all winter, they might be some hardier than other varieties, but we have sudden changes from summer heat to zero, which settles the peach crop about three years out of four. When we learn how to keep peach buds entirely dormant until Spring, we will come nearer having frost proof peaches.

REPORT OF MUSKINGUM COUNTY HORTICULTURAL SOCIETY.

By Jno. D. Imlay.

Mr. President:

Our Muskingum County Horticultural Society has been in existence well on to thirty years, and we think in a very prosperous condition, having an attendance of from one hundred and fifty to five hundred at each meeting. The meetings are held at the residences of the members mostly. During the seasonable weather, we try to have them in the country, and during the winter in or near the city of Zanesville. We usually have two papers at each meeting, one of them strictly Horticultural, the other any foreign subject, with recitations and music frequently.

During the year, we have had the pleasure of hearing Prof. W. R. Lazenby talk on External Adornment of the Home, which was most excellent. At our May meeting, our local physician, Dr. J. M. Fassing, read a paper on Heredity and Education, which was handled with a masterly hand. Mr. Wm. M. Wylie, of Frazeysburg, at our September meeting, gave some terse facts on Fruit Culture and its Profits. Prof. Selby's, Dr. Geyer's, W. R. Beatty's, and A. W. Livingston's adresses were of great value. Subjects talked of, or papers submitted were: Table Decorations; Plant Food and Plant Growth; The Creation of Man; Peaches, Old and New; History of Horticulture.

Besides papers at each meeting, we have report of fruit prospects and condition of crops; a question box that brings some subjects to talk about. Our standing committee on Orchards, Small Fruits, Flowers, Vegetables, Entomology, and Nomenclature, are always expected to make a report. Our exhibition table is usually well filled with seasonable fruits, vegetables and flowers which are quite attractive and beautiful, and a committee that reports on them and names are given if necessary.

I may say the sociability of our meetings is highly appreciated; the attendants bring their dinner and the host furnishing the coffee, the Society having its own tables, dishes, etc. We make a royal day to the hard working Horticulturists, our latch string always hanging out to any one interested.

Our efficient officers during the past year were S. R. Moore, President; Peter Cashbaugh, Vice President; Miss Nellie H. McCann, Secretary; Theo. Deitz, Treasurer.

REPORT OF COUNTY SOCIETIES.

LAKE COUNTY.

To the President and Members of the Ohio State Horticultural Society:

The present year has not been one of unmixed success to the Lake county Horticultural Society. Although the membership is the same as last year, there has been an increase of expenses over receipts so that the surplus which has been in the Treasury for several years, has been used up and there is now a deficit instead; this was caused, mainly, by the strawberry show in Willoughby, which did not pay expenses, and the lack of funds was the main reason why the fruit show was not held in September, as was intended.

The strawberry show was the best, or one of the best ever held by the Society. The large number of exhibits, the large number of varieties shown, and the siz and quality of fruit equaled any show held in the county.

The number of Meetings held, if we except the State Meeting, will be ten, two less than usual. The attendance has been rather less than in former years, the one nearest to a failure being in Madison, where there were about a half a dozen in attendance; and in looking back, that meeting reminds me of some held after the Society was first organized where there were but few present, the room cold, no fire, and the President, J. H. Tryon, on his knees whittling kindlings to build a fire The last meeting of the Society, which was held on Willoughby Plains is in striking contrast. The Grange Hall, in which it was held, was so neat and clean that one would almost be willing to eat from the floor; the room was well heated, there was a display of fruit flowers and vegetables, a good sized audience, the Society was entertained by music and an original paper, and a very fine and bountiful dinner was provided by the ladies.

H. R. DRAKE, Painesville, *Secretary.*
J. H. BRITTON, Painesville, *President.*

LORAIN COUNTY.

We meet three times yearly. The second Saturday in January, Annual Meeting for election of officers and retrospective work. Second meeting called our Strawberry meeting in June. Third meeting in September named Grape Meeting. The date of these meetings is decided by the Executive Committee.

Our Strawberry crop was immense, and all small fruit abundant and prices very low, altogether not averaging over five cents per quart. No peaches. Pears, one-half crop, prices fair. Quinces, three-fourths crop, market good. Apples, one-fourth crop, quality poor, market hungry. Strawberry vines now an average stand with an area 50 per cent. higher than I ever saw before. Unless the Lord prevents, the markets will be glutted next season. Raspberry and Blackberry plants, small but quite healthy, are below the average. Peach buds going into winter strong and well and pear buds promise abundant bloom in Spring.

Our meetings during the past year have been both interesting and profitable. The show of strawberries was wonderful, one full box of many contained twelve berries, and the show of grapes almost equaled it. The Strawberry Meeting was held in Oberlin, the Grape Meeting, among the grapes on Avon Point.

Fraternally,
N. L. COTTON.

LUCAS COUNTY.

The Lucas County Horticultural Society continues in its usual flourishing condition, socially and intellectually, as in the past seventeen years with an increasing attendance and interest among the young people. The Society meets eleven times a year, mostly at the home of some member in different parts of the country, but on account of the size of the Society, many members now do not have house room for the Society, or barn room for the horses, during the inclement months, when the yards cannot be utilized. So in two or three instances in the past year, the meetings have been held in some public hall in the neighborhood.

The Lucas County Floricultural Society meets at the same time and place although in a separate room, and the combined average attendance is over one hundred, reaching many times a year one hundred and seventy-five. The topics, which are assigned to the essayists as come up incidentally, are varied to interest the farmer as well as the horticulturist, for our Society is made up largely of farmers. One ably presented and the discussion that follows, are at times very animated. and at all times very instructive and interesting. The report of the Special Committees, such as Small Fruits, Orchard, Field Crops, etc., is an interesting feature of the session.

The report of each meeting is published in the "Maumee Advance" but the report is not published for distribution.

I wish to call call your attention to the social feature of all gatherings, which I consider very important, giving as it does the rural resident and family, a chance to get better acquainted with their neighbors, form acquaintances and friendships with people in distant parts of their own county and even the state.

EASTERN CUYAHOGA SOCIETY.

Eastern Cuyahoga Horticultural Society is in a prosperous condition and has nearly completed the twelfth year of its work.

Last January Mr. W. H. Dille, of Euclid, was elected to succeed F. H. Cushman as President, which position he has filled most admirably.

We have an enrollment of seventy members. No specially new features this year, but interest in the work is unabated. The wet weather of November 11th and 12th was very unfavorable for our annual exhibit, but all departments had unusually good display.

This season, this Society has suffered a great loss in the death of one of our most active and efficient members, Mrs. A. O. Dille, mother of Pres. Dille, granddaughter of one of our Euclid pioneers. Her life work was done among us, and her reminiscences of the past were full of interest, having witnessed, as she had, the passing of the wilderness and the growth of vineyards and fruit-farms along Lake Erie.

May the coming generation of Horticulturists be worthy to succeed those who preceded it.

I remain,
Yours very truly,
N. D. KEYES, Sec'y E. C. C. Hort. Soc.

COUNTY HORTICULTURAL SOCIETIES.

Ashtabula County—
President, J. S. Sill ....Ashtabula, Ohio
Secretary, E. E. Taylor..East Ashtabula, Ohio

Cuyahoga County—
President, W. H. Dille ....Euclid, Ohio
Secretary, N. D. Keyes..Euclid, Ohio

Clark County—
President, W. N. Scarff ....New Carlisle, Ohio
Secretary, A. E. Humphrey ....Mad River, Ohio

Fulton County—
President, S. B. Sheels ....Delta, Ohio
Secretary, T. H. Kelsey..Wauseon, Ohio

Greene County—
President, D. Overholser ....Alpha, Ohio
Secretary, Hiram Burdg..Xenia, Ohio

Holmes County—
President, J. G. Bilderbach..Millersburg, Ohio
Secretary, A. Gorrell ....Holmesville, Ohio

Lorain County—
President, G. N. Carruthers..Oberlin, Ohio
Secretary, Prof. F. S. Reefe ....Elyria, Ohio

Lucas County—
President, C. W. Counter ....Toledo, Ohio
Secretary, Thomas Towers ....Toledo, Ohio

Lake County—
President, J. J. Harrison..Painesville, Ohio
Secretary, E. M. Woodard..Kirtland, Ohio

Montgomery County—
President, N. Ohmer ....Dayton, Ohio
Secretary, F. W. Ritter..Dayton, Ohio

Muskingum County—
President, S. R. Moore .... Zanesville, Ohio
Secretary, Nellie McCann .... Zanesville, Ohio

Portage County—
President, A. D. Olin .... Ravenna, Ohio
Secretary, Andrew Wilson .... Ravenna, Ohio

Summit County—
President, J. P. Sperry .... Tallmadge, Ohio
Secretary, Mrs. C. N. Gaylord .... Monroe Falls, Ohio

Stark County—
President, James T. Hayhurst .... Canton, Ohio
Secretary, Mrs. Margaret Rockhill .... Canton, Ohio

Warren County—
President, J. Mardis .... Lebanon, Ohio
Secretary, Sylvan A. Lewis .... Lebanon, Ohio

Williams County—
President, Bartlett Thompson .... Pulaski, Ohio
Secretary, Enoch Cox .... Bryan, Ohio

LIST OF MEMBERS

OF

OHIO STATE HORTICULTURAL SOCIETY.

A

Names.	Town.	County.
Albaugh, N. H	Tadmor	Miami
Ames, Luther	Weston	Wood
Aultfather, H. H	Minerva	Stark
Allen, C. W	Erie	Michigan
Arthur, Mrs. A. K	Zanesville	Muskingum
Atwater, J	Castalia	Erie
Alderman, W. N	Athens	Athens
Avery, C. E	Euclid	Cuyahoga
Alvord, G. B	Bement, Ill	
Allison, J. W	Mercer, Pa	
Armstrong, D. H	Cove	Jackson
Aldrich, O. W	Columbus	Franklin

B

Bitzer, M	New Berlin	Stark
Bucehley, E. M	Greenville	Darke
Beaver, J. F	Dayton	Montgomery
Britton, J. H	Painesville	Lake
Brodhead, E. A	Kittaning	Armstrong
Brawley, E. H	Amesville	Athens
Baker, C. V	Stoutsville	Fairfield
Benton, H	Savannah	Ashland
Bredbeck, Wm	Danbury	Ottawa
Bear, J. C	Dayton	Montgomery
Barclay, J. E	Neapolis	Lucas
Bobo, Wm	Lysander	Athens
Bethel, A. S	Athens	Athens
Bagley, J	White Cottage	Muskingum
Baum, Philip	Creston	Wayne

C

Campbell, G. W	Delaware	Delaware
Crawford, M	Cuyahoga Falls	Summit
Cushman, E. H	Euclid	Cuyahoga

Cox, Nelson	Bradrick	Lawrence
Claypole, E. W	Akron	Summit
Church, Royal	Wolfpen	Meigs
Counter, C. W	Toledo	Lucas
Clotts, Frank	Gahanna	Franklin
Cook, J. U	Augusta	Carroll
Cox, E. G	Bradrick	Lawrence
Campbell, G. K	Coolville	Athens
Courtwright, Silas	Lancaster	Fairfield
Caton, George	Zanesville	Muskingum
Cowen Bros	Barnesville	Belmont
Colvin, Chase	South Charleston	Clark
Carruthers, G. N	Oberlin	Lorain
Carr, F. E	Lakewood	Lake

D

Dillie, W. H	Euclid	Cuyahoga
Dietz, Theo	Zanesville	Muskingum
Deming, Co	Salem	Columbiana

E

Eaton, L. D	LaBelle	Lawrence
Elliot, Albert	Defiance	Defiance
Eaton, J. P	LaBelle	Lawrence
Earhart, W. H	Lexington	Richland

F

Freeman, Isaac	Rex	Miami
Farnsworth, W. W	Waterville	Lucas
Faust, C. W	Canton	Stark
Frease, E. S	Okolona	Henry
Foote, J. L	Brooklyn	Cuyahoga
Freeman, C. M	Rex	Miami
Finney, T. T	Millersburg	Holmes
Fouch, M. S	Wooster	Wayne
Ford, J. H	Ravenna	Portage

G

Green, W. J	Wooster	Wayne
Geib, Peter	Cleveland	Cuyahoga
Gilbert, H. W	Palmyra	Portage
Gault, W. C	Ruggles	Ashland
Green, J. F	Sandusky	Sandusky
Gill, Geo. W	Columbus	Franklin
Gates, F	Painesville	Lake

H

Harrison, J. J	Painesville	Lake
Hunt, R. A	Euclid	Cuyahoga
Harris, W. C	Toledo	Lucas

Harrington, C	Painesville	Lake
Hale, Albert	Mogadore	Summit
Hartzler, P. J	Weilersville	Wayne
Hole, Clayton	New Berlin	Stark
Hayes, E. Z	Warsaw	Coshocton
Hoffman, A. J	Leipsic	Putnam
Hine, J. S	Columbus	Franklin
Hicks, W. W	Toledo	Lucas
Harvey, R. R	Carrollton	Carroll
Holt, J. B	Rutland	Meigs
Hull, F. W. & Son	Lane	Lake
Halliday, J. R	North Star	Darke
Hoffman, B. A	Madisonburgh	Wayne

I

Innis, G. S	Columbus	Franklin
Imlay, J. D	Zanesville	Muskingum

J

Jenkins, J.	Winona	Columbiana
James, John A	Washington C. H	Fayette

K

Knowlton, Levi	Utica	Licking
Kime, Geo. T	Zanesville	Muskingum
Knellinger, Frank	Zanesville	Muskingum

L

Lauppe, Chas	Urbana	Champaign
Longenecker, Theo. F	Dayton	Montgomery
Livingston, A. W	Columbus	Franklin
Leonard, A. M	Piqua	Miami.
Lefever, W. G	Edison	Morrow
Loop, A. I	North East, Pa	
Lawrence, J. A	Harlem Springs	Carroll
Lawrence, G. E	Marion	Marion
Lloyd, J. J	Grelton	Henry
Launder, Thos	Zanesville	Muskingum

M

Miller, Wm	Gypsum	Ottawa
Moore, N. & Sons	Toledo	Lucas
Moore, S. R	Zanesville	Muskingum
Maxwell, J. W	Euclid	Cuyahoga
Montgomery, Carey W	Newark	Licking
Miller, W. W	Columbus	Franklin
Moorehead, S. E	Minerva	Starke
Moore, U. S	Mohawk Village	Coshocton
Malley, C. W	Wooster	Wayne
Miller, John A	Osborn	Green

N

Nye, Horace S.	Zanesville	Muskingum
Niesz, J. K.	Maumee	Lucas

O

Ohmer, N	Dayton	Montgomery
Overholser, Daniel	Alpha	Greene
Owen, W. H	Catawba Island	Ottawa

P

Pentland, F	Lockland	Hamilton
Pierce, L. B.	Tallmadge	Summit
Pfrimmer, Jacob	Milford	Clermont
Powell, S. A	Givens	Pike
Philpot, S. A	McClure	Henry
Petersime, J. M.	Webster	Darke
Perkins, W. E	Springfield	Clark
Perrine, John	Camp Hagerman	Warren
Patterson, W. H.	Melrose	Paulding
Phillips, Thomas	Shade	Athens
Paddock, Benjamin	Hartwell	Hamilton

R

Roudebush, Lowell	Stone Lick	Clermont
Rockhill, S. H	Canton	Stark
Ritter, F. W	Dayton	Montgomery
Rutherford, M. O.	Langsville	Meigs
Reed, Joseph A.	Canton	Stark

S

Streeper, J. P	Columbus	Franklin
Shirer, Alfred	Dayton	Montgomery
Sweet, M. E	Kirtland	Lake
Suter, Peter	Naowash	Lucas
Sterling, C. C.	Grand Rapids	Wood
Sweetland, C. B.	Zanesville	Muskingum
Selby, August D.	Wooster	Wayne
Scarff, W. N	New Carlisle	Clark
Slade, H. D.	East Cleveland	Cuyahoga
Sala Bros	Minerva	Starke
Stoner, E. F	Little York	Montgomery
Storrs, W. G.	Painesville	Lake
Swigart, Henry	Dean	Montgomery
Schramm, Chas	Athalia	Lawrence
Swartswalder, M	Pomeroy	Athens
Smart, S. W	Willoughby	Lake
Stewart, J. S.	Mansfield	Richland
Stewart, T. G.	Ashland	Ashland
Smith, W. N	Wooster	Wayne
Starr, E. S.	Philadelphia, Pa.	
Swartz, Geo. J.	Wooster	Wayne

T

Tryon, J. H.	Willoughby	Lake
Tracy, W. N.	Toledo	Lucas
Tussing, R. J	Canal Winchester	Franklin
Taylor, Sam'l	Pleasant Corners	Franklin
Thornburg, Thos. E	Ashland	Ashland
Towers, Thos.	Toledo	Lucas
Teeter, D. M.	Belleville	Richland

V

Vanderlip, H. E	Madison	Lake
Van Deman, H. A.	Parkesley, W. Va.	
Vergon, F. P	Delaware	Delaware

W

Withoft, Fred G.	Dayton	Montgomery
Wyss, Daniel	New Philadelphia	Tuscarawas
Waid, C. H	Emery	Fulton
Woodard, E. M	Kirtland	Lake
Whitney, C. L	Warren	Trumbull
Wise, Watson	Canton	Stark
Williams, Alex	South Kirtland	Lake
Warner, E. M.	E. Toledo	Lucas
Webster, F. M.	Wooster	Wayne
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Warder, R. H.	North Bend	Hamilton
Williams, A. E.	South Kirtland	Lake
Ward, J. G.	Eagle City	Clarke
Watts, Geo. T.	Geneva	Ashtabula
Wheeler Bros.	Melrose	Paulding
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